FSB FINANCIAL STABILITY BOARD

Implementation and Effects of the G20 Financial Regulatory Reforms

28 November 2018 4th Annual Report

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Executive Summary

Ten years after the crisis, the new regulatory framework is largely in place…

- Coordinated by the FSB, the main financial reforms the G20 called for are now in place. Their implementation is well underway.
- Some policy work is still ongoing, particularly for the insurance sector and central counterparties (CCPs).
- The reforms make the financial system more resilient, and thereby reduce the likelihood, severity – and associated public cost – of future crises.

…fixing the fault lines exposed by the crisis in four main areas.

- Large banks are better capitalised, less leveraged and more liquid. The banking system is therefore more resilient to economic shocks.
- Implementation of too-big-to-fail (TBTF) reforms is advancing, including via the establishment of effective resolution regimes for banks.
- Over-the-counter (OTC) derivatives markets are simpler and more transparent. The use of central clearing has increased and collateralisation is more widespread.
- Those aspects of non-bank financial intermediation that contributed to the financial crisis have declined significantly and generally no longer pose financial stability risks.

The FSB is now pivoting towards dynamic implementation of the G20 reforms…

- Implementation of the reforms is not complete and it remains uneven. It is critical to maintain momentum and avoid complacency, in order to achieve the goal of greater resilience.
- This includes work to: implement the final Basel III reforms; operationalise resolution plans for cross-border banks and build effective resolution regimes for insurers and CCPs; make OTC derivatives trade reporting more effective; and further strengthen the oversight and regulation of non-bank financial intermediation.

… and rigorous evaluations of their effects…

- The FSB has evaluated the effects of reforms on infrastructure finance and incentives to centrally clear OTC derivatives. Relevant standard-setting bodies are following up on their findings.
- This shows that the FSB evaluation framework is working as intended, identifying and delivering adjustments where appropriate, without compromising on financial resilience.
- Rigorous evaluation will ensure that reforms remain fit for purpose as the financial system evolves, and new vulnerabilities emerge.

…in order to support the provision of financial services to the real economy.

- The global financial system has continued to grow. Lending to non-financial firms and households has increased, and its cost remains low – due in part to exceptionally accommodative monetary policies.
- Growth varies across regions, but there are no signs that the reforms have led to a shortage in the supply of financing.
- The supply of financial services has also become more diversified, including through the growth in non-bank financial intermediation.

- The long-term trend towards higher global financial integration has continued, notwithstanding some divergent trends across market segments.

The financial system is stronger, but risks keep evolving…

- After a decade of very low interest rates, financial institutions and markets may not be sufficiently prepared for potential economic and financial risks from adverse market developments.
- High sovereign, corporate and household debt levels in many parts of the world could expose the financial system to significant risk. Sharply rising yields could trigger swings in cross-border capital flows, which could spill over to local equity, bond and foreign exchange markets.
- Changes in the global financial system, including an increasing role of investment funds, could affect the transmission and amplification of shocks.

… and ensuring financial stability calls for continued vigilance….

- The FSB will continue to monitor and assess the resilience of evolving market structures and the impact of technological innovation. These include the resilience of financial markets in stress, as well as the growth of non-bank financial intermediation and cyber risks.
- Reaping the full benefits of the financial reforms requires an open and integrated global financial system. Detecting, and addressing, sources of market fragmentation is an important task going forward.

…and the support of G20 Leaders in implementing the agreed reforms, and reinforcing global regulatory cooperation.

- Regulatory and supervisory bodies should lead by example in promoting the timely, full and consistent implementation of remaining reforms to Basel III, resolution regimes, OTC derivatives and non-bank financial intermediation. This will support a level playing field and avoid regulatory arbitrage.
- Frameworks for cross-border cooperation between authorities should be enhanced in order to build trust, allow for the sharing of information, and to preserve an open and integrated global financial system.
- Authorities should evaluate whether the reforms are achieving their intended outcomes, identify any material unintended consequences, and address these without compromising on the objectives of those reforms.
- Financial stability authorities should continue to contribute to the FSB's monitoring of emerging risks and stand ready to act if such risks materialise.

Implementation of reforms in priority areas by FSB jurisdictions (as of November 2018)

The table provides a snapshot of the status of implementation progress by FSB jurisdiction across priority reform areas, based on information collected by FSB and standard-setting bodies' (SSBs) monitoring mechanisms. The colours and symbols in the table indicate the timeliness of implementation. For Basel III, the letters indicate the extent to which implementation is consistent with the international standard. For trade reporting, the letters indicate to what extent effectiveness is hampered by identified obstacles.

	Basel III^						**Compen-sation**	**Over-the-counter (OTC) derivatives**				**Resolution**				**Non-bank financial intermediation**	
Reform Area	Risk-based capital	Liquidity Coverage Ratio (LCR)	Require-ments for SIBs	Large exposu-res frame-work (as of 1 Jan. 2019)	Levera-ge ratio	Net Stable Funding Ratio (NSFR)		Trade reporting	Central clearing	Platform trading	Margin	Minimum TLAC require-ment for G-SIBs (as of 1 January 2019)	Transfer / bail-in / tempora-ry stay powers for banks	Recovery and resolution planning for systemic banks	Transfer / bridge / run-off powers for insurers	Money market funds (MMFs)	Securi-tisation
Agreed phase-in (completed) date	*2013 (2019)*	*2015 (2019)*	*2016 (2019)*	*2019*	*2018*	*2018*		*end-2012*	*end-2012*	*end-2012*	*2016 (2020)*	*2019/2025 (2022/2028)*					
Argentina	C	C					△										**
Australia	C	C														*	
Brazil	C	C					△										**
Canada	C	C														**	
China	C, △	C	C, &				△	R, F									
France	MNC	LC	C														*
Germany	MNC	LC	C														
Hong Kong	C	C														**	
India	C	LC															
Indonesia	LC	C														**	
Italy	MNC	LC	C														*
Japan	C	C	C														
Mexico	C	C						R								**	*
Netherlands	MNC	LC	C														*
Rep. of Korea	LC	C														**	
Russia	C	C					△									**	
Saudi Arabia	C	LC		C		C		R								**	
Singapore	C	C														**	
South Africa	C	C					△									**	
Spain	MNC	LC	C														*
Switzerland	C	C	C													**	
Turkey	C	C														**	
United Kingdom	MNC	LC	C														*
United States	LC	C	C, &				△										

Legend

- **Basel III:** Final rule published and in force. Risk-based capital and leverage ratio are based on the initial reform package agreed in 2010 prior to Basel III finalisation in December 2017. Requirements for SIBs – covering both D-SIBs and higher loss-absorbency for G-SIBs (for G-SIB home jurisdictions) – published and in force.
- **OTC derivatives:** Legislative framework in force and standards/criteria/requirements (as applicable) in force for over 90% of relevant transactions.
- **Resolution:** Final rule for external Total Loss Absorbing Capacity (TLAC) requirement for G-SIBs published and implemented. For the powers columns, all three of the resolution powers for banks (transfer, bail-in of unsecured and uninsured credit claims, and temporary stay) and insurers (transfer, bridge and run-off) are available. Both recovery and resolution planning processes are in place for systemic banks.
- **Compensation:** All FSB Principles and their Implementation Standards for Sound Compensation Practices (Principles and Standards) implemented for significant banks.
- **Non-bank financial intermediation (NBFI):** MMFs – Final implementation measures in force for valuation, liquidity management and (where applicable) stable net asset value (NAV). Securitisation – Final adoption measures taken (and where relevant in force) for an incentive alignment regime and disclosing requirements.

△

- **Basel III:** Final risk-based capital rule in force, with the exception of countercyclical capital buffer rule.
- **Compensation:** All except a few (three or less) FSB Principles and Standards implemented.

- **Basel III:** Final rule published but not in force, or draft regulation published.
- **OTC derivatives:** Regulatory framework being implemented.
- **Resolution:** Final rule for external TLAC requirement for G-SIBs published but not yet implemented, or draft rule published. For the powers columns, one or two of the resolution powers for banks (transfer, bail-in of unsecured and uninsured credit claims, and temporary stay) and insurers (transfer, bridge and run-off) are available. Recovery planning is in place for systemic banks, but resolution planning processes are not.
- **Compensation:** FSB Principles and Standards partly implemented (more than three Principles and/or Standards have not yet been implemented) for significant banks.
- **NBFI:** MMFs – Draft/final implementation measures published or partly in force for valuation, liquidity management and (where applicable) stable NAV. Securitisation – Draft/final adoption measures published or partly in force for implementing an incentive alignment regime and disclosing requirements.

- **Basel III**: Draft regulation not published (light red colour indicates deadline for reform not lapsed).
- **Resolution**: Draft rule for external TLAC requirement for G-SIBs not published. For the powers columns, none of the three resolution powers for banks (transfer, bail-in of unsecured and uninsured credit claims, and temporary stay) and insurers (transfer, bridge and run-off) are available. Neither recovery nor resolution planning processes are in place for systemic banks.
- **NBFI**: MMFs – Draft implementation measures not published for valuation, liquidity management and (where applicable) stable NAV. Securitisation – Draft adoption measures not published for implementing an incentive alignment regime and disclosing requirements.

- **Resolution**: Minimum TLAC requirements not applicable for jurisdictions that are not home to G-SIBs.

C / LC / MNC / NC

- **Basel III**: Regulatory Consistency Assessment Program (RCAP) – assessed "compliant" (C), "largely compliant" (LC), "materially non-compliant" (MNC) and "non-compliant" (NC) with Basel III rules. See the RCAP scale. The grade for SIB requirements relates only to the G-SIB requirements.

^

- **Basel III**: Does not include reforms finalised in December 2017, which take effect from 2022. Risk-based capital column excludes certain technical standards that came into force in 2017. Leverage ratio column based on the 2014 exposure definition.

&

- **Basel III**: China's G-SIB requirements are in force, while its D-SIB policy framework is under development. The US does not identify any additional D-SIBs beyond those designated as G-SIBs; its framework was found to be broadly aligned with the D-SIB principles. See the RCAP assessment (June 2016).

R / D / F

- **OTC derivatives**: further action required to remove barriers to full trade reporting (R) or to access trade repository data by foreign authority (F). See the FSB report on Trade reporting legal barriers: Follow-up of 2015 peer review recommendations (November 2018).

*** / ****

- **NBFI**: Implementation is more advanced than the overall rating in one or more / all elements of at least one reform area (MMFs), or in one or more / all sectors of the market (securitisation). The 2018 update was undertaken by IOSCO using the assessment methodology in its 2015 peer reviews in these areas.

Changes in implementation status since the 2017 G20 Summit

The table shows the changes in implementation status by FSB jurisdiction across priority areas since 30 June 2017. The colour on the left-hand cell reflects the status as of June 2017, while the colour on the right-hand cell indicates the status as of November 2018. The table does not include changes in implementation status for new reform elements (i.e. not shown in the colour-coded table in the previous year) or reclassifications of previous status.

Reform area / Jurisdiction	Basel III	OTC derivatives	Resolution	Non-bank financial intermediation+
Argentina	Leverage ratio NSFR			MMFs
Australia	NSFR		Transfer/bridge/run-off powers for insurers	
Brazil	NSFR	Margin		
Canada			Minimum TLAC requirement for G-SIBs	
China	NSFR	Margin		
France			Transfer/bridge/run-off powers for insurers	MMFs
Germany				MMFs
Hong Kong	Leverage ratio, NSFR	Trade reporting, platform trading		MMFs
India		Platform trading		
Indonesia	NSFR			
Japan	NSFR			
Mexico	Leverage ratio			
Netherlands				MMFs
Rep. of Korea	NSFR	Margin		
Russia	Leverage ratio, NSFR			
Singapore	Leverage ratio NSFR			MMFs
South Africa	NSFR	Central clearing		MMFs
Switzerland		Trade reporting	Minimum TLAC requirement for G-SIBs	
Turkey	NSFR	Trade reporting		
United Kingdom			Minimum TLAC requirement for G-SIBs	MMFs
United States			Minimum TLAC requirement for G-SIBs	

+ The 2018 update on MMFs and securitisation was undertaken by IOSCO using the assessment methodology in its 2015 peer review reports in these areas.

1. Introduction

This is the fourth annual report to the G20 on the implementation and effects of reforms.

- In 2009, the G20 launched a comprehensive programme of financial reforms to fix the fault lines that led to the global financial crisis and build a more resilient financial system.
- The reform programme has four core elements: making financial institutions more resilient; ending too-big-to-fail (TBTF); making derivatives markets safer; and enhancing resilience of non-bank financial intermediation.[1]
- This report takes stock of the progress made by FSB members in implementing the reforms. It also provides an assessment of their effects on the global financial system to date.
- Looking ahead, the report highlights some challenges in promoting a financial system that supports the G20's objective of strong, sustainable and balanced growth, while preserving open and integrated markets and adapting to rapid technological change.

Published ten years after the crisis, the report highlights the progress made in the reform agenda as the FSB pivots towards implementation and rigorous evaluation.

- The G20 established the FSB in 2009 and tasked it with delivering an ambitious reform programme. Significant progress has been made since then in developing policies to make the financial system more resilient.
- The FSB is now pivoting away from the design of new policy initiatives, towards ensuring the implementation of these reforms, and rigorous evaluation of their effects. It is also carrying out vigilant monitoring to identify, assess and address new and emerging risks.

Section 2 of this report documents the substantial progress that has been made in implementing key post-crisis financial reforms.

- International adoption of Basel III capital and liquidity standards has generally been timely.
- Progress has been made towards ending TBTF, particularly for systemically important banks, and implementing the G20 commitments on OTC derivatives markets.
- The FSB has created a monitoring framework and, together with standard-setting bodies (SSBs), developed policy measures that are being implemented by jurisdictions to strengthen the oversight and regulation of non-bank financial intermediation.

Section 3 discusses how the reforms have contributed to the core of the financial system becoming more resilient to economic and financial shocks.

- Large internationally active banks are better capitalised, less leveraged and more liquid.
- There has been progress in addressing risks associated with systemically important banks.
- OTC derivatives markets are more transparent and have been simplified, including through the use of central clearing.
- The elements of non-bank financial intermediation considered to have contributed the most to the financial crisis have declined. Measures are being taken to enhance the resilience of the non-bank finance sector, including by addressing the vulnerabilities from asset management activities.
- These developments have not impeded the overall provision of credit to the real economy, which has continued to grow and diversify, and which generally remains at low cost.

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[1] As noted in the press release from the October 2018 FSB Plenary meeting, non-bank financial intermediation replaces the term "shadow banking," which was previously used by the FSB to describe credit intermediation involving entities and activities (fully or partially) outside the regular banking system.

Section 4 describes the FSB's work to evaluate whether reforms are working as intended.

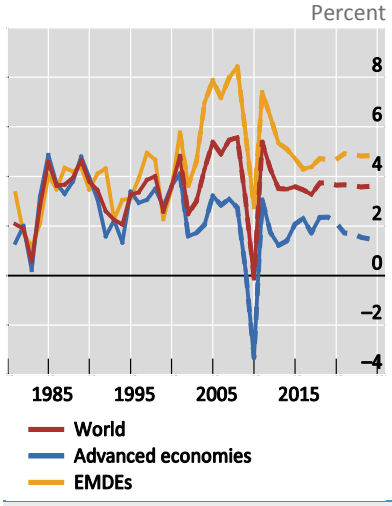
- The first two evaluations under its July 2017 Framework for Post-Implementation Evaluation of the Effects of the G20 Financial Regulatory Reforms assess whether reforms are operating as intended and to identify and deliver adjustments where appropriate, without compromising financial resilience.
- The first evaluation assessed how G20 financial reforms implemented to date have affected the provision of infrastructure finance. The evaluation does not identify material negative effects on the availability and cost of infrastructure finance, and concludes that the effects of those reforms has been of a second order relative to other factors.
- A second evaluation examined the effects of reforms on incentives for market participants to centrally clear OTC derivatives. It concludes that, overall, the reforms are achieving their goals of promoting central clearing, especially for the most systemic participants.
- Additional evaluations are underway or planned on the effects of reforms on the financing of small and medium-sized enterprises (SMEs) and on policies aimed at ending TBTF.

Nonetheless, preserving financial stability, and supporting sustainable growth, requires the continued monitoring of developments in the global financial system.

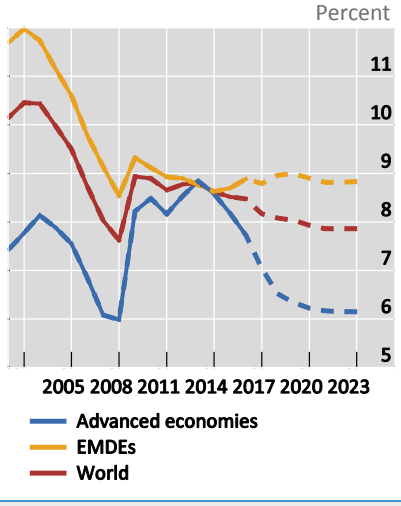
- The FSB continues to scan the horizon to identify and assess emerging risks through regular discussion by its members of macro-financial developments, as well as through the bi-annual Early Warning Exercise conducted jointly with the IMF.
- The FSB's recent discussion of conjunctural developments has noted how global economic growth has resumed post crisis, albeit at lower rates in advanced economies (AEs). However, public debt levels have increased globally, in part as a legacy of the crisis (Graph 1), while the indebtedness of the non-financial sector has continued to increase.
- And financial intermediation has shifted to non-banks, which may have implications for the functioning and resilience of financial markets in future periods of stress.

The global economy is still recovering from the effects of the financial crisis **Graph 1**

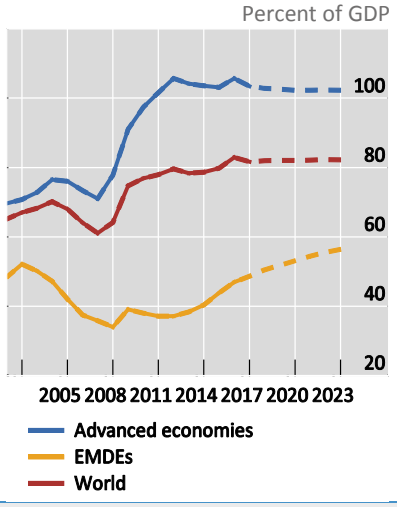
Economic growth has recovered in recent years, but at lower levels for AEs



Unemployment is projected to return to pre-crisis levels for AEs



Higher public debt ratios in AEs remain a legacy of the crisis



Note: All data from 2017 onwards are projections. Definitions are based on those used by the IMF.

Left panel: Real GDP growth rates. Middle panel: Simple average of unemployment rates for all jurisdictions. Right panel: Public debt to GDP ratio. The world figures in the left and right panels are weighted by nominal GDP and do not adjust for exchange rates. Source: International Monetary Fund (IMF), World Economic Outlook, October 2018.

The final section of this report documents the benefits of cooperation between jurisdictions in the aftermath of the crisis. It sets out why it is important that such cooperation is sustained if the G20 reforms are to be implemented effectively.

- Maintaining cross-jurisdictional cooperation is critical as memories of the crisis fade.
- In particular, financial supervisory and regulatory authorities need to be able to share information across borders through effective legal and other arrangements.
- Strong common standards and close cooperation help avoid market fragmentation and provide the basis on which to build open and integrated financial markets.
- This is particular important as the financial system continues to evolve, including due to the effects of new technology.

2. Implementation status

2.1 Building resilient financial institutions

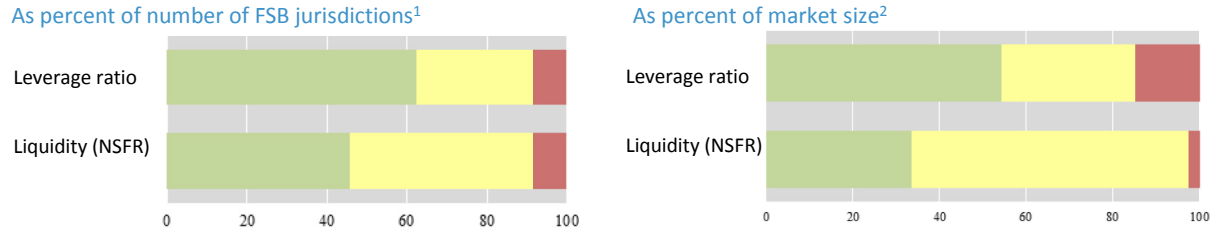
Regulatory adoption of several core Basel III elements has generally been timely to date.

- All 24 FSB jurisdictions have the core elements of the Basel III risk-based ***capital*** and ***liquidity*** (Liquidity Coverage Ratio (LCR)) rules in force.
- Final rules on higher loss absorbency requirements for **global systemically important banks (G-SIBs)** are in force in all jurisdictions that have G-SIBs headquartered in them. Final rules on the assessment methodology and higher loss absorbency requirements for **domestic systemically important banks (D-SIBs)** are in force in 23 jurisdictions.

However, challenges remain on the timely adoption of some other Basel III standards.

- Notwithstanding progress since last year, more work is needed in implementing the **leverage ratio**[2] and the **Net Stable Funding Ratio (NSFR)**, which came into force in January 2018 (Graph 2). The leverage ratio is now in force in 15 jurisdictions; 11 jurisdictions have final rules in force for the NSFR, while another 11 have published draft or final rules.

Implementation efforts continue on the leverage ratio and the NSFR **Graph 2**



[1] The six EU members of the FSB are presented as separate jurisdictions.

[2] Market size based on assets of banks domiciled in each FSB jurisdiction at end-2016.

- Jurisdictions have not yet fully adopted revised standards whose implementation deadline has passed, and progress since last year is limited. These are: the standardised approach for counterparty credit risk exposures (six FSB jurisdictions have final rules in place); capital requirements for bank exposures to central counterparties (six jurisdictions) and equity investments in funds (nine jurisdictions); margin requirements for non-centrally cleared derivatives (fifteen jurisdictions); and the revised Pillar 3 framework (ten jurisdictions).
- Jurisdictions continue to strive to implement other Basel III standards whose implementation deadline is within a year. These include the supervisory framework for measuring and controlling large exposures, the standard for interest rate risk in the banking book and the requirements for TLAC holdings and disclosure.
- Delayed implementation may have implications for a level playing field, and puts unnecessary pressure on those jurisdictions that have implemented the standards based

[2] Based on the existing (2014) exposure definition. Implementation based on the revised exposure definition, agreed in December 2017, is due by 2022.

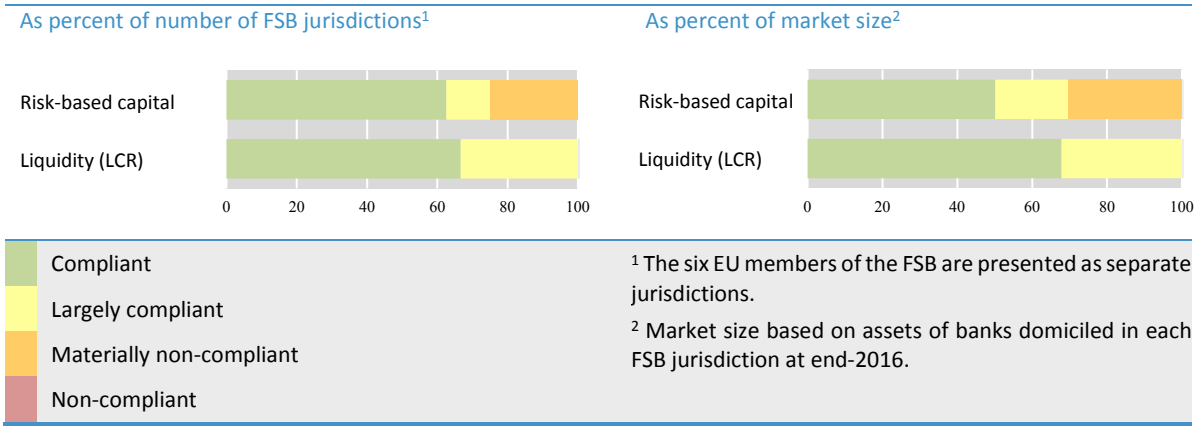
on the agreed timelines. The reported reasons for implementation delays are: concerns over the pace of implementation in other jurisdictions (affecting the level playing field); the complexity of the standards (or difficulties in interpreting and transposing them into domestic rules); and operational challenges for banks (e.g. IT issues).

- Jurisdictions should lead by example and implement these reforms as per the agreed timelines. The BCBS is monitoring closely the implementation of the reforms and will consider additional measures to improve implementation timeliness.

The consistency of implementation with some Basel standards should be further improved.

- ***Risk-based capital framework*** – BCBS has assessed all FSB jurisdictions (Graph 3).[3]
  - Eighteen (representing 68% of the market) were found to be compliant or largely compliant with risk-based capital rules; and
  - The six EU members of the FSB (assessed as a single jurisdiction, representing 32% of the market) were found to be materially non-compliant. In their March 2018 follow-up reporting, these members did not report actions to address identified deviations.
- ***Liquidity coverage ratio*** – all FSB jurisdictions have been assessed by the BCBS and were found to be compliant (16) or largely compliant (8) with the LCR.

Consistency with Basel III risk-based capital rules should be further improved **Graph 3**



[1] The six EU members of the FSB are presented as separate jurisdictions.

[2] Market size based on assets of banks domiciled in each FSB jurisdiction at end-2016.

- ***G-SIB and D-SIB standards*** – Ten of the eleven FSB jurisdictions that are home to G-SIBs were found by the BCBS to be compliant with G-SIB standards.[4] The D-SIB frameworks in these jurisdictions were also found to be broadly aligned with the D-SIB principles.
- ***Net stable funding ratio and large exposures framework.*** The BCBS has begun to assess the consistency of implementation of the NSFR and the large exposures framework. The first FSB jurisdiction assessed was found to be compliant with both standards. Most jurisdictions are expected to be assessed by end 2020.

Work is also underway to develop a global insurance capital standard.

- The International Association of Insurance Supervisors (IAIS) is developing a global risk-based Insurance Capital Standard (ICS) for internationally active insurance groups. In 2017, the IAIS launched extended field testing on version 1.0 of the ICS. The ICS will be finalised by end-2019 for confidential reporting to supervisory colleges in a 5 year monitoring phase.

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[3] The most material inconsistencies relate to internal models for credit risk, counterparty credit risk and securitisation, and the definition of capital.

[4] Canada's G-SIB standards have not been assessed since it only became home to a G-SIB with the 2017 G-SIB designation.

Adoption of regulatory and supervisory frameworks for compensation is almost completed.

- All FSB jurisdictions have fully, or almost fully, implemented the FSB Principles and Standards for Sound Compensation Practices, which aim to reduce incentives for excessive risk taking that may arise from the structure of firms' compensation schemes.
- The FSB published supplementary guidance to the Principles & Standards on the use of compensation tools to address misconduct risk, and recommendations to assist national supervisory authorities to consider and monitor the effectiveness of compensation tools.

2.2 Ending too-big-to-fail

Processes for identifying G-SIFIs are in place.

- Lists of G-SIBs are reviewed annually, while the BCBS recently published its revised assessment framework for G-SIBs.
- The IAIS is developing a holistic framework to mitigate systemic risk in the insurance sector. In light of progress with that framework, the FSB, in consultation with the IAIS and national authorities, has decided not to engage in an identification of global systemically important insurers (G-SIIs) in 2018. The FSB will assess the IAIS's recommendation to suspend G-SII identification from 2020 once the holistic framework is finalised in November 2019.[5]
- The assessment methodologies for identifying non-bank non-insurer global systemically important financial institutions (NBNI G-SIFIs) will be finalised after the work on addressing structural vulnerabilities from asset management activities is completed.

Implementation of the policy framework for G-SIFIs has advanced the most for G-SIBs.

- Implementation of Higher Loss Absorbency as well as of reporting and disclosure requirements for G-SIBs is proceeding on a timely basis (see section 2.1).
- Supervisory frameworks have improved and supervisory colleges have been established for almost all G-SIBs. The effectiveness of colleges has improved since 2015 in terms of information-sharing, coordinated risk assessment and crisis preparedness. Yet challenges remain, including those related to legal constraints on information-sharing, supervisory resource constraints and expectation gaps between home and host supervisors.[6]
- The level of compliance with the BCBS Principles on risk data aggregation and risk reporting is still to be improved and the overall implementation progress remains very limited. Most G-SIBs have found it challenging to comply with the principles and in 2017 they made, at best, marginal implementation progress.[7] The BCBS will continue to monitor progress and has made additional recommendations to further promote their adoption.
- Implementation of the TLAC Standard is ongoing. In most G-SIB home jurisdictions external TLAC requirements have been finalised (Canada, Switzerland, the UK and the US) or are close to being finalised (Banking Union, Japan).[8] However, implementation of internal TLAC is less advanced and approaches to internal TLAC distribution and calibration differ among G-SIB hosts. Furthermore, few jurisdictions have introduced the BCBS requirements on cross-holdings of other G-SIBs' TLAC or specific disclosure requirements for TLAC.

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5 See the November 2018 FSB press release on a proposed holistic framework for the assessment and mitigation of systemic risk in the insurance sector.

6 See the BCBS Progress report on the implementation of principles for effective supervisory colleges (December 2017).

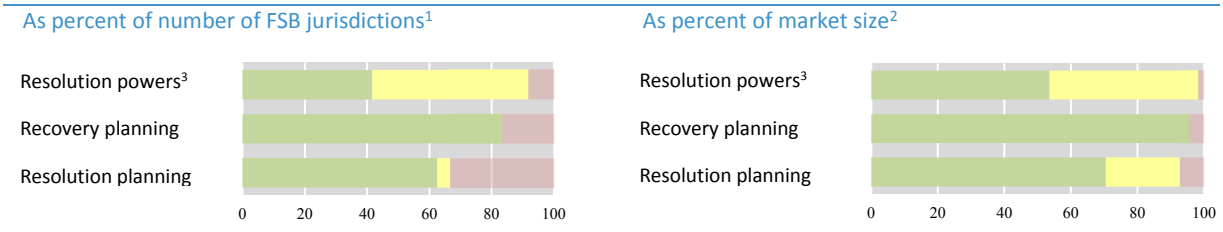
7 See BCBS report on Progress in adopting the Principles for effective risk data aggregation and risk reporting (June 2018).

8 Firms that are currently headquartered in an emerging market economy and designated as G-SIBs will comply with the minimum TLAC requirements starting from 2025.

Substantial work remains in achieving effective resolution regimes and operationalising plans for systemically important banks and non-bank financial institutions (Graph 4).

- Almost all G-SIB home and key host jurisdictions have in place comprehensive bank resolution regimes that align with the FSB Key Attributes of Effective Resolution Regimes for Financial Institutions. However, implementation of the Key Attributes is still incomplete in some FSB jurisdictions. The powers most often lacking are bail-in (14 jurisdictions) and to impose a temporary stay on the exercise of early termination rights (9 jurisdictions). Reforms underway in several FSB jurisdictions address some, but not all, of these gaps.
- Crisis Management Groups (CMGs) have been established, and resolution strategies and operational resolution plans adopted, for all G-SIBs. Despite the very substantial progress, important technical and operational aspects need to be addressed to make sure that resolution plans can be executed effectively. In addition, institution-specific cross-border cooperation agreements (CoAgs) are still not in place for some G-SIBs.[9]
- Implementation of resolution reforms is less advanced in the insurance sector. The majority of FSB jurisdictions do not have in place comprehensive insurance resolution regimes that are aligned with the Key Attributes, and lack powers and tools needed to operationalise resolution plans.
- Most jurisdictions do not yet have in place a comprehensive resolution regime for CCPs. Over the past year authorities began to establish CMGs for 13 CCPs identified as systemically important in more than one jurisdiction.[10] CMGs and institution-specific CoAgs are not yet in place for all 13 CCPs and resolution planning for CCPs is still at an early stage.

More work is needed to implement comprehensive bank resolution regimes **Graph 4**



Fully implemented/in place

Partially implemented/in place

Not implemented

[1] The six EU members of the FSB are presented as separate jurisdictions.

[2] Market size based on assets of banks domiciled in each FSB jurisdiction at end-2016.

[3] Composite indicator on extent to which jurisdictions have transfer, bail-in and temporary stay powers in their regime.

[9] See the FSB Seventh Report on the implementation of resolution reforms (November 2018).

[10] These CCPs were reported as systemically important in more than one jurisdiction by agreement between home and host authorities on the basis of a set of criteria set out in the FSB Guidance on CCP Resolution and Resolution Planning.

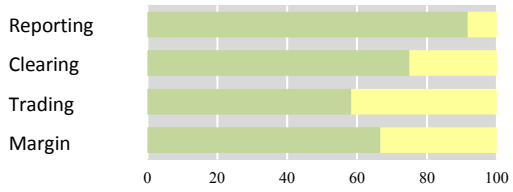
2.3 Making derivatives markets safer

Overall, good progress continues to be made across the G20's OTC derivatives reform agenda (Graph 5).

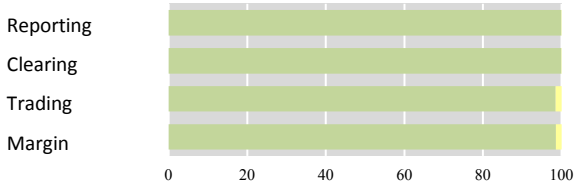
- Implementation is most advanced for trade reporting and for the interim higher capital requirements for non-centrally cleared derivatives (NCCDs), although progress in implementing the final capital requirements is much less (see section 2.1). Comprehensive[11] trade reporting requirements have been implemented in 22 jurisdictions;[12] central clearing frameworks in 18 jurisdictions; and platform trading frameworks in 14 jurisdictions.
- Comprehensive margin requirements for NCCDs have been implemented in 16 jurisdictions (two more since last year).
- There has been progress since last year in adopting comprehensive standards for determining when OTC derivatives are standardised and should be required to be centrally cleared (one more jurisdiction) and subject to platform trading (two more jurisdictions).[13] Furthermore, new determinations entered into force for specific derivatives products to be executed on organised trading platforms in six FSB member jurisdictions.

Implementation is most advanced in the largest OTC derivatives markets **Graph 5**

As percent of number of FSB jurisdictions[1]



As percent of market size for interest rate swaps[2]



Regulatory framework and standards in force for over 90% of relevant transactions

Regulatory framework being implemented

No regulatory framework in place

[1] The six EU members of the FSB are presented as separate jurisdictions.

[2] Market size is proxied by single currency interest rate derivatives' gross turnover in April 2016 (Bank for International Settlements (BIS) 2016 Triennial Survey).

The availability and use of TRs and CCPs continues to expand.

- Progress continues to be made in enhancing the regulatory frameworks for TRs and CCPs, including in cross-border aspects such as deference decisions in relation to CCPs, and in setting expectations for their sound design and operation consistent with the Principles for Financial Market Infrastructures (PFMI) by the Committee on Payments and Market Infrastructures (CPMI) and International Organization of Securities Commissions (IOSCO).

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11 For the purposes of this section, "comprehensive" means that the standards, criteria or requirements apply to over 90% of OTC derivatives transactions as estimated by that jurisdiction. In the case of margin requirements, "comprehensive" means that the standards, criteria or requirements in force in a jurisdiction would have to apply to over 90% of transactions covered, consistent with the BCBS–IOSCO Working Group on Margin Requirements phase in periods. See the FSB report on OTC Derivatives Markets Reforms: Thirteenth Progress Report on Implementation (November 2018).

12 This includes Turkey, where legal changes made trade reporting requirements effective as from 30 November 2018.

13 This includes India, where final guidelines for authorisation of electronic trading platforms were issued in October 2018.

- Trade reporting requirements are most prevalent for interest rate and foreign exchange derivatives transactions. There were 34 TRs (or similar infrastructures) operating in FSB jurisdictions as of September 2018, 9 of which were authorised in multiple jurisdictions.[14]
- Over the past year, there have been new authorisations of existing CCPs in 3 jurisdictions, and continued broadening of the asset class offerings of existing CCPs. Further, a number of jurisdictions are establishing local CCPs ahead of implementing mandatory clearing.

Work is ongoing at the international level to make trade reporting truly effective.

- Challenges to effective trade reporting remain, including a lack of harmonisation of data formats and data quality issues, and legal barriers to full reporting of and authorities' access to TR data.
- In all but 3 FSB jurisdictions, no further action is required to implement the FSB's 2015 thematic review recommendations on removing or addressing barriers to full trade reporting.[15] Five jurisdictions allow masking of counterparty identifiers for some transactions, but this is set to expire in two of them by end-2018 and to roll-off in the others once no longer necessary. In 12 jurisdictions, changes have been made or are underway to address or remove barriers to access to TR data by foreign authorities or non-primary domestic authorities, e.g. by providing direct access to such data under an MoU.
- While TR data is beginning to be more widely used by authorities, its usefulness continues to be affected by data quality issues, including differences in the details of reporting requirements among TRs and jurisdictions that make it challenging to aggregate or compare data from different sources. International work streams have been focusing on technical implementation challenges affecting the effectiveness of trade reporting.[16]

2.4 Enhancing resilience of non-bank financial intermediation

- The FSB has created a system-wide monitoring framework to assess global trends and risks in the system of non-bank financial intermediation and, in collaboration with SSBs, has been developing policy measures to strengthen oversight and regulation of non-bank financial intermediation.[17]

Progress has been made in implementing policies to reduce the run risk of MMFs (Graph 6).

- Implementation of IOSCO recommendations for MMFs is most advanced in 12 FSB jurisdictions, including the two largest markets (US and China). Eight jurisdictions made progress in this area since last year.
- Twenty-one FSB jurisdictions have implemented the fair value approach for the valuation of MMF portfolios, but progress in liquidity management is less advanced and less even, with nine jurisdictions yet to have published draft regulation in this area.

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[14] The EU is counted as one FSB member jurisdiction for this purpose.

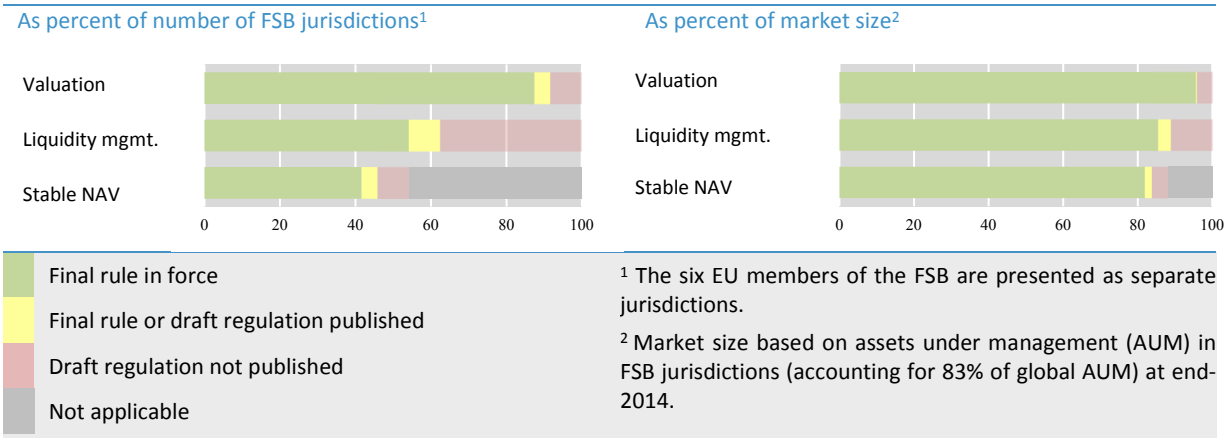
[15] See the FSB report on Trade reporting legal barriers: Follow-up of 2015 peer review recommendations (November 2018).

[16] The joint CPMI-IOSCO working group on harmonisation of key OTC derivatives elements issued technical guidance on the Unique Transaction Identifier (UTI) in February 2017 and on the Unique Product Identifier (UPI) in September 2017, and on critical data elements other than the UTI and UPI in April 2018. Recently CPMI-IOSCO launched a consultation on governance arrangements for critical data elements other than UTI and UPI. The FSB in late December recommended implementation of the UTI in all FSB member jurisdictions by end-2020.

[17] These are in the areas of: mitigating risks in banks' interactions with non-bank financial intermediaries; reducing the susceptibility of money market funds (MMFs) to "runs"; improving transparency and aligning incentives in securitisation; dampening pro-cyclicality and other financial stability risks in securities financing transactions; and assessing and mitigating financial stability risks posed by other non-bank financial intermediation.

- The number of FSB jurisdictions permitting MMFs that offer a stable net asset value (NAV) (in limited circumstances and regulated with adequate safeguards) has increased from 9 to 13 in 2018. Ten out of the 13 jurisdictions have final implementation measures in force.

Implementation progress is most advanced in the largest MMF markets **Graph 6**



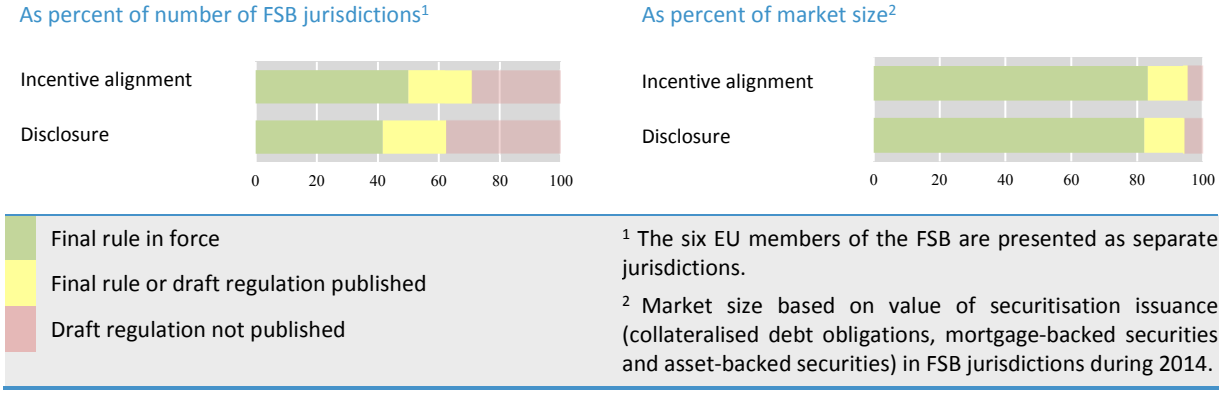
[1] The six EU members of the FSB are presented as separate jurisdictions.

[2] Market size based on assets under management (AUM) in FSB jurisdictions (accounting for 83% of global AUM) at end-2014.

Implementation of incentive alignment approaches for securitisation is ongoing (Graph 7).

- Implementation progress remains mixed across FSB jurisdictions in this area.
- In the EU, the Securitisation Regulation and related Capital Requirements Regulation Amendments will contribute towards more complete implementation of IOSCO's recommendations once they enter into application in 2019.
- Most jurisdictions that have implemented incentive alignment requirements (partially or fully) oblige issuers to (directly or indirectly) retain typically 5% of the credit risk of the securitisation. However, there are exemptions to these requirements in some jurisdictions.

Implementation of incentive alignment reforms for securitisation is uneven **Graph 7**



[1] The six EU members of the FSB are presented as separate jurisdictions.

[2] Market size based on value of securitisation issuance (collateralised debt obligations, mortgage-backed securities and asset-backed securities) in FSB jurisdictions during 2014.

Implementation of the FSB policy framework for the oversight and regulation of non-bank financial intermediation continues to progress.

- In 2017, all FSB jurisdictions (as well as Belgium, Cayman Islands, Chile, Ireland and Luxemburg) participated in the annual monitoring exercise to track global trends and risks (e.g. maturity/liquidity transformation and leverage) in non-bank financial intermediation.

The exercise continues to be refined over time to provide more accurate measures of the degree to which such intermediation gives rise to bank-like financial stability risks.

- Although progress is being made, more work is needed to monitor and respond to risks in this area.[18] To strengthen the monitoring of non-bank financial intermediation, the FSB is assessing data availability and making improvements to its annual monitoring exercise.

Implementation of reforms in other policy areas for non-bank financial intermediation is also at an early stage.

- In order to mitigate spillovers of risks to the banking system, the BCBS published a framework for the identification and management of step-in risk.[19] Nine jurisdictions have adopted risk-based capital requirements for banks' investments in the equity of funds, which came into force in 2017. Two jurisdictions have adopted the supervisory framework for measuring and controlling banks' large exposures (see section 2.1).
- IOSCO issued in February 2018 final recommendations to improve liquidity risk management practices in investment funds,[20] so as to address liquidity mismatch in open-ended funds as part of its operationalisation of FSB policy recommendations to address structural vulnerabilities from asset management activities.
- Implementation of the FSB policy recommendations for securities financing transactions (SFTs), including haircuts on non-centrally cleared SFTs, remains at an early stage. Work is underway to adopt standards and processes on global securities financing data collection and aggregation that are relevant for financial stability monitoring and policy responses.

2.5 Progress in other reform areas

- Most jurisdictions have identified a macroprudential authority or established inter-agency bodies for **macroprudential policies**, strengthened system-wide monitoring, and are using tools to address financial stability risks. However, as indicated by IMF-World Bank Financial Sector Assessment Program (FSAP) assessments and FSB country reviews, additional work may be needed in some jurisdictions to ensure macroprudential frameworks are effective.
- Considerable progress has been made in implementing the second phase of the **G20 Data Gaps Initiative** (DGI), which aims to address the gaps identified in the global financial crisis by enhancing the collection and dissemination of reliable and timely statistics for policy use. Areas of progress include, amongst others, monitoring of non-bank financial intermediation, reporting of data on G-SIBs, and improved coverage, timeliness, and periodicity of sectoral accounts. However, some key challenges remain and high-level political support is crucial to overcome them by the initiative's completion in 2021.[21]
- Administrators of the most widely used **interest rate benchmarks** (EURIBOR, LIBOR and TIBOR) continued to take steps to improve the robustness of these benchmarks, although these have not yet been completed. In a recent public statement,[22] the FSB welcomed the progress made in many jurisdictions to identify near-risk-free interest rate benchmarks and to increase their market use where appropriate. It also noted that in the markets which face the disappearance of IBORs, notably markets currently reliant on LIBOR, there needs

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18 See the Thematic Review on the Implementation of the FSB Policy Framework for Shadow Banking Entities (May 2016).

19 Step-in risk refers to the risk that a bank will provide financial support to a non-bank financial entity beyond, or in the absence of, its contractual obligations should the entity experience financial stress. See the BCBS Guidelines on Identification and management of step-in risk (October 2017).

20 See the IOSCO Recommendations for Liquidity Risk Management for Collective Investment Schemes (February 2018).

21 See the Third Progress Report on the Second Phase of the G20 Data Gaps Initiative (September 2018).

22 See the FSB statement on Interest rate benchmark reform: overnight risk-free rates and term rates (July 2018).

to be a transition to new reference rates. In addition, over 100 market participants have made Statements of Commitment to the **FX Global Code of Conduct**, issued in May 2017.

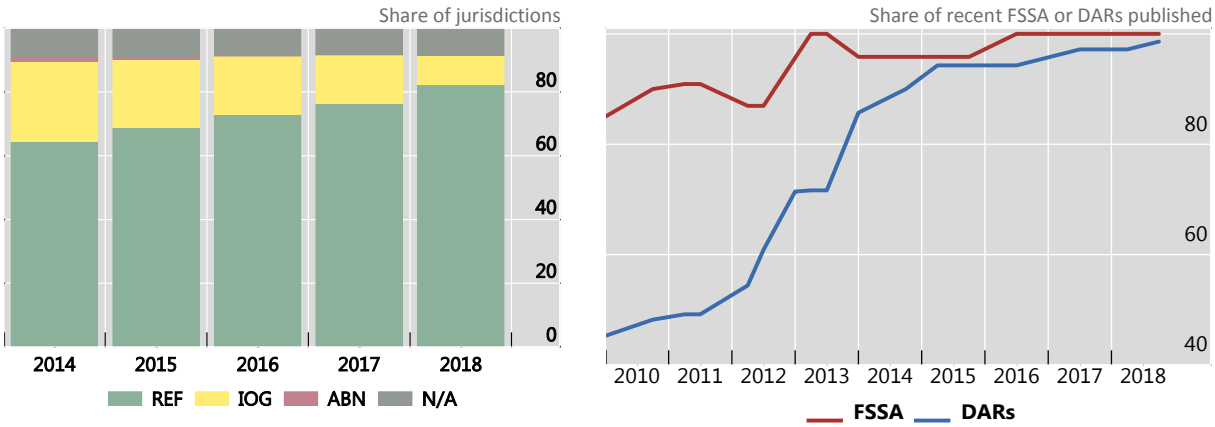
- Of the three FSB jurisdictions identified in a 2012 FSB peer review as not having an explicit **deposit insurance system**, only one (South Africa) has not yet introduced one.
- All relevant jurisdictions report having an oversight framework with registration and ongoing requirements for **hedge funds** or their managers, and strengthening the regulatory/capital framework for **monoline insurers in relation to structured credit**.
- All jurisdictions report that they have put in place requirements for the registration and oversight of **credit rating agencies (CRAs)**. Some work remains to avoid mechanistic reliance on CRA ratings by reducing references to CRA ratings in national laws and regulations, developing alternative standards of creditworthiness, and enhancing firms' credit assessment capabilities.
- The global **Legal Entity Identifier (LEI)** system has issued 1.3 million LEIs in over 200 countries, covering securities with a total value of over EUR 95 trillion worldwide. This unique identifier is used in two-thirds of FSB jurisdictions to support regulatory activities. Additional uses are contemplated, such as in the area of correspondent banking. Further adoption of the LEI by legal entities worldwide and its use by authorities for regulatory purposes are essential to fully reap its collective benefits.
- The international and US accounting standard setters have issued separate standards on accounting for **expected loan loss provisioning**: IFRS 9 came into force in January 2018, while the Current Expected Credit Loss standard will be effective from January 2020. Both are forward-looking and take account of the lessons of the crisis. The FSB has asked the standard-setters to monitor the consistent implementation of these standards.[23] With regard to insurance contracts, the International Accounting Standards Board (IASB) published IFRS 17 in May 2017 (which will come into force in 2021), which sets out a single, consistent approach to accounting for insurance contracts.
- The FSB is engaging with the International Forum of Independent Audit Regulators (IFIAR) and global networks to enhance the **quality of audits** of G-SIFIs. In March 2018, IFIAR published the latest annual survey of findings from its members' inspections of audit firms. Despite a downward trend in inspection findings, progress is not experienced in all jurisdictions or at the same rate. These results affirm the view that the global networks must continue efforts to strengthen their systems of quality control and drive consistent execution of high quality audits.

[23] The BCBS published in March 2017 details of the interim regulatory treatment of accounting provisions and standards for transitional arrangements.

Progress in other reforms and in disclosing adherence to international standards Graph 8

Implementation in other reform areas has continued to progress in recent years

All FSB jurisdictions have now published the reports and assessment results of their latest FSAP



Left panel: Percentage of FSB jurisdictions reporting implementation progress in other (non-core) reform areas over the last five years, adjusting for structural breaks (i.e. substantial changes in the reporting benchmark/guidance of the recommendations) so as to facilitate comparability over time. REF=Implementation completed. IOG=Implementation ongoing. ABN=Applicable but no action envisaged at the moment. N/A=Not applicable. Source: FSB Implementation Monitoring Network Survey.

Right panel: Percentage of FSB jurisdictions publishing their latest Financial Sector Stability Assessment (FSSA) and Detailed Assessment Reports (DARs) of adherence to the core principles for banking, insurance and securities markets.

2.6 Strengthening adherence to international financial standards

FSB members are implementing their commitments to lead by example (Graph 8).[24]

- Almost all FSB jurisdictions that have not had an FSAP assessment in the last five years are undergoing one in 2018-19 (Australia, Brazil, France, Italy, Singapore). The FSAPs for China, the Euro Area, India, Japan, Saudi Arabia and Spain were completed over the past year.
- All FSB jurisdictions have now published the financial system stability assessment reports and the results of their standards compliance assessments in IMF-World Bank FSAPs.
- Over the past year, the FSB completed the country peer reviews of Argentina, Korea, Singapore and Hong Kong. This brought to an end of the first round of country reviews. The second round of such reviews, starting with Mexico and South Africa, is underway.

[24] See the FSB webpages on FSAP participation and on FSB country peer reviews.

3. Overall effects of reforms

3.1 Building a more resilient financial system

Ten years after the financial crisis, large banks are much better capitalised, less leveraged and more liquid (Graph 9).[25]

- Large internationally active banks fully meet the Basel III capital reforms agreed in 2010, having almost doubled their common equity tier 1 (CET1) capital from USD 2 trillion in 2011 to USD 3.7 trillion in 2017. Almost 90% of all G-SIBs (up from two-thirds in 2017) meet the 2019 minimum external TLAC requirements, and 68% of them meet the 2022 requirements (up from 28%). Banks' capital shortfalls vis-à-vis the December 2017 Basel III reforms (due in 2022) are much more limited compared to those for the initial Basel III package.[26]
- Since 2009, large banks have more than doubled their risk-based capital ratios, while their leverage has dropped by half. Banks have achieved this primarily by retaining earnings, rather than by raising equity or shedding assets. Variation across regions reflects different starting points as well as other factors, such as differences in macroeconomic conditions.
- Liquidity profiles have also improved – mainly due to an increase in high quality liquidity assets such as government bonds and, in some cases, deposits at central banks associated with unconventional monetary policies, The banks most affected by liquidity problems during the crisis have also substantially reduced reliance on short-term wholesale funding. Overall, banks' liquidity shortfall vis-à-vis the LCR and NSFR is nearing zero.
- The build-up of capital and liquidity buffers reflects regulatory requirements, but also market pressures in light of the crisis experience.[27] Strengthened capital buffers and liquidity profiles mean that the core of the global banking system is more resilient to economic or financial shocks than before the crisis.[28] Recent studies document the complementary effects of the different elements of Basel III on resilience and growth.[29]
- Likewise, the shift in bank business models is associated with a more sound risk-return trade-off.[30] Many banks have reduced proprietary trading assets and increased the share of loans to non-financial firms and households as well as more stable funding sources.[31]

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[25] For an overview of progress made since the financial crisis, see also the 2018 BIS Annual Economic Report and chapter 2 of the IMF's October 2018 Global Financial Stability Report.

[26] Total capital shortfall, which mainly affects specific G-SIBs, was USD 25 billion at end-2017 for the final Basel III reforms (agreed in 2017), compared to almost USD 1 trillion in 2011 for the initial Basel III reforms. See the October 2018 BCBS Basel III Monitoring Report.

[27] See How to reach all Basel requirements at the same time? by Birn et al (ACPR/Banque de France, Economic and Financial Discussion Note 28, June 2017).

[28] Empirical studies that examine the likelihood of banking crisis and creditor losses for different levels of capitalisation support this finding. One example is that the recent surge in Libor-OIS spreads did not affect CDS spreads, despite its adverse effect on banks' funding costs (see the 2018 BIS Annual Economic Report).

[29] For the complementary nature of risk-based capital and the leverage ratio, see Calibrating the leverage ratio by Fender and Lewrick (2015), which find that the leverage ratio is more effective than risk-based capital in constraining banks' risk taking during expansion periods. For the complementary nature of different Basel III elements in a general equilibrium context, see Macroeconomics of bank capital and liquidity regulations by Boissay and Collard (BIS Working Papers No 596, December 2016). The study finds that capital and liquidity requirements are mutually reinforcing, directing financing providers to less but more productive lending, except when liquid assets are scarce.

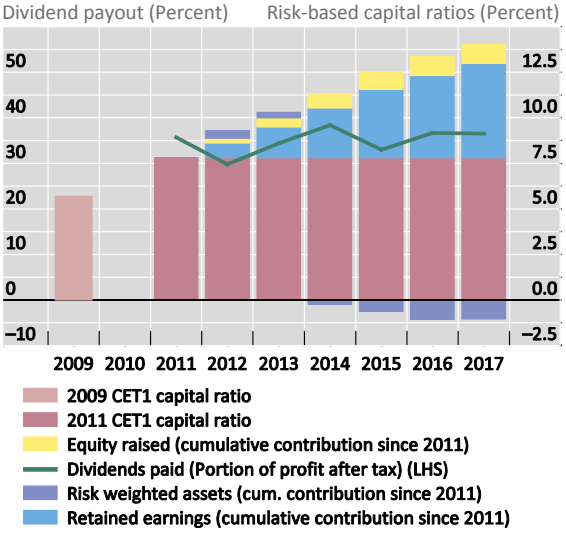
[30] See Bank business models: popularity and performance by Roengpitya et al (BIS Working Papers No 682, December 2017); and Structural changes in banking after the crisis (CGFS Papers No 60, January 2018).

[31] See the FSB's 2016 Annual Report to the G20 on the implementation and effects of the G20 financial regulatory reforms and Graph III.3 of the 2018 BIS Annual Economic Report.

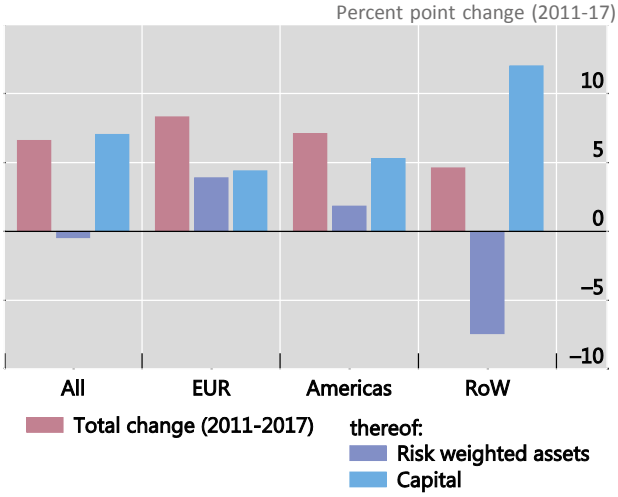
Banks have strengthened capital and liquidity positions

Graph 9

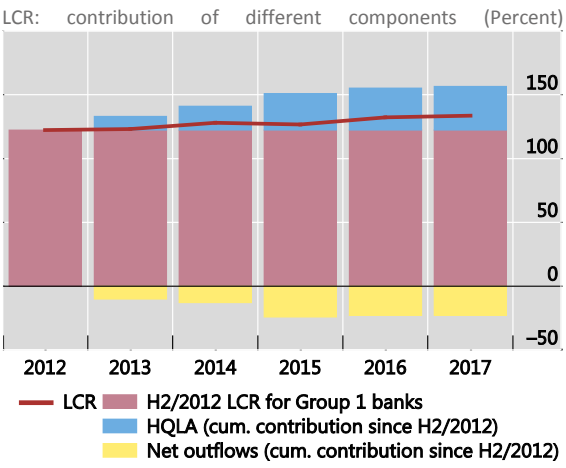
Large banks have increased their capital ratios mainly through retained earnings…



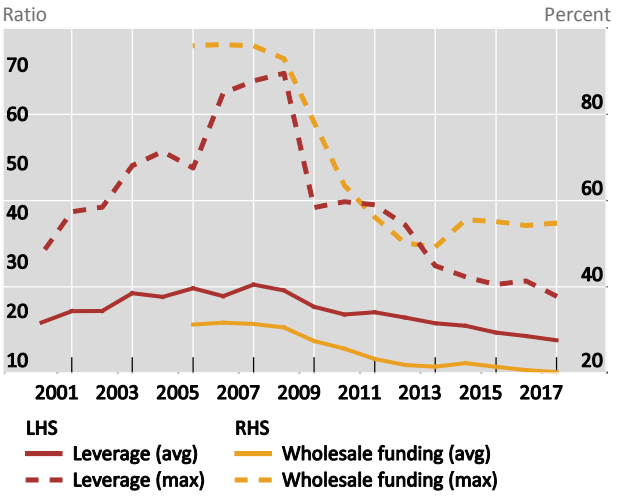
… although there is some variation across regions



Banks have built liquidity buffers largely by increasing high quality liquid assets (HQLA)



Large banks have reduced leverage and improved their funding profiles. Extreme cases have been addressed.



Top Left: Evolution of fully phased-in common equity tier 1 (CET1) capital ratios of the BCBS "Group 1" banks (i.e. banks that have Tier 1 capital of more than €3 billion and are internationally active), decomposed into retained earnings' accumulation, equity raised, and changes in risk weighted assets (RWAs). The figure for 2009 is based on the initial Basel III proposal; there is no data for 2010, while the 2016 figures are for H1 2016. Dividends as a proportion of after-tax profits paid by these banks.

Top right: As of 30 June 2017; EUR=Europe (26 banks), Americas (20 banks); RoW= Rest of the World (41 banks). Source: October 2018 BCBS Basel III Monitoring Report.

Bottom left: Cumulative contributions of High Quality Liquidity Assets (HQLA) and net outflows to evolution of the average Liquidity Coverage Ratio (LCR) of 61 large international banks, relative to changes in banks' total assets. Source: October 2018 BCBS Basel III Monitoring Report.

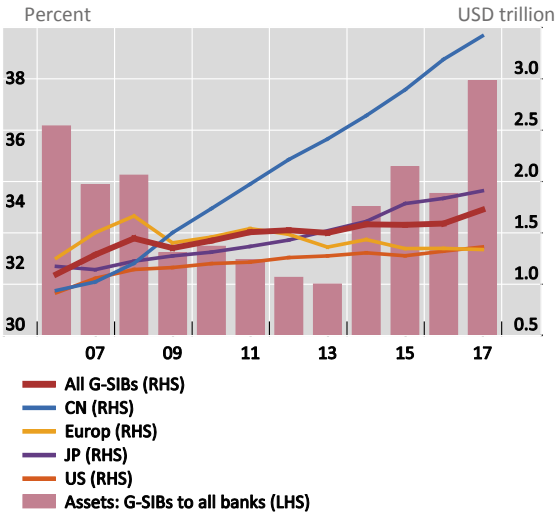
Bottom right: Bank leverage (total assets to tier 1 capital), and wholesale funding (as a portion of total funding) of G-SIBs. All series are adjusted for missing values. Source: Fitch.

Bank profitability has recovered in recent years, but varies across regions (Graph 10).

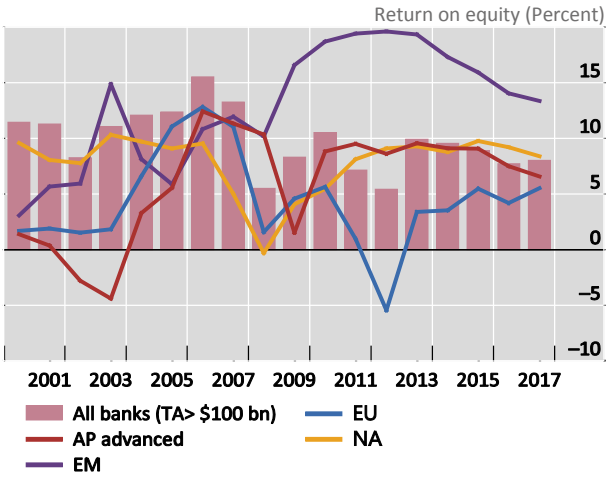
- Overall bank profitability remains below pre-crisis levels, with large differences across regions. Profitability of EMDE banks is declining, but remains higher than before the crisis, while profitability has improved for AE banks in recent years.
- The reduction in average return on equity levels of AE banks following the crisis is explained by reduced leverage and maturity transformation (partly in response to the regulatory reforms) as well as to macro-financial conditions (low interest rate environment), structural factors (competition, inflexible cost structures) and, in some cases, legacy issues (e.g. non-performing loans, restructuring costs, misconduct fines). Progress in addressing these factors is more evident in the case of US banks.

The size and profitability of large banks continue to evolve — Graph 10

G-SIBs' share in global banking assets has increased in recent years



Large banks' profitability has recovered post-crisis, but differs across regions



Left panel: Evolution of average asset size of G-SIBs in absolute terms by region (using 2015 FX rates) and overall as a proportion of global banking assets. Source: Fitch and FSB Global Shadow Banking Monitoring Report 2017 (March 2018).

Right panel: Return on equity for all global banks with total assets exceeding US$100 billion as of end-2015, weighted by total assets and grouped by region. Asia Pacific (AP) advanced=Australia/Hong Kong/Japan/Korea/Singapore, EU=Europe, NA=Canada/US, EM=Emerging Markets (Brazil/China/India/Malaysia/Mexico/Qatar/Russia/Saudi Arabia/Taiwan/Turkey/UAE). For the AP advanced region, an outlier bank was removed from the sample for 2003. Source: Fitch.

Recent analysis confirms some progress in addressing the risks associated with systemically important banks (Graph 11).

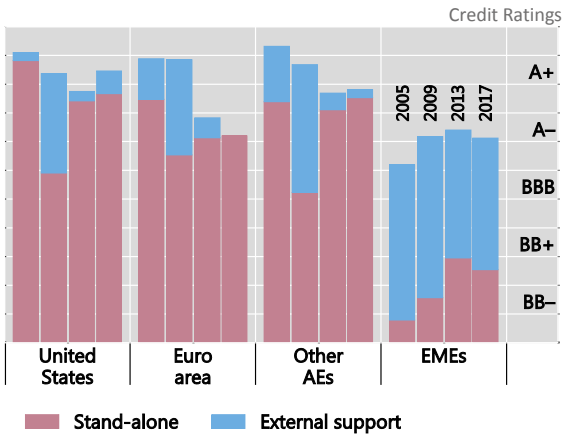
- Estimates of the perceived funding cost advantages of G-SIBs have generally declined since the crisis. Differences across jurisdictions reflect a number of factors, including the stage of implementation and effects of reforms as well as macro-financial developments.[32]

[32] See, for example, chapter 2 of the IMF's October 2018 Global Financial Stability Report; Structural changes in banking after the crisis by the CGFS (CGFS Papers no. 60, January 2018); the 2018 BIS Annual Economic Report; The Impact of the Identification of GSIBs on their Business Model by Violon et al (ACPR/Banque de France, Economic and Financial Discussion Note 33, March 2018); and The 'Too Big to Fail' Subsidy in Canada: Some Estimates by Mora (Bank of Canada Staff Working Paper 2018-9, February 2018).

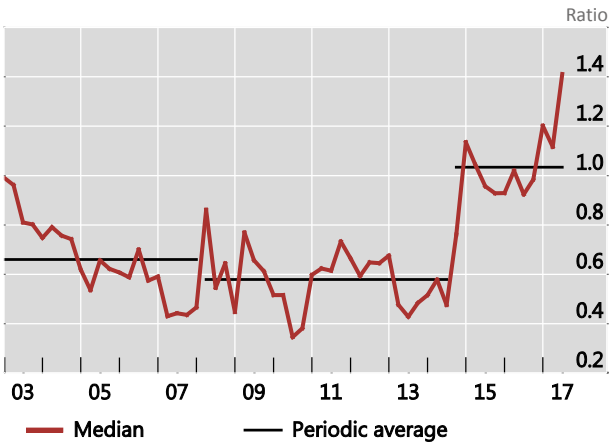
- Higher total loss absorbing capacity and progress in resolution reforms have contributed to this decline. Yet, important technical and operational aspects need to be addressed to ensure that resolution plans can be executed effectively, including on a cross-border basis.
- The share of G-SIBs in global banking assets has now surpassed pre-crisis levels (Graph 10). The average balance sheet size has remained broadly stable in absolute terms in Europe and the United States, but assets of Asian G-SIBs (particularly in China)[33] have increased markedly in recent years.

Reduced market perception of government support for systemic banks — Graph 11

Credit support ratings have dropped in some countries since the peak of the crisis



The difference in credit default swap (CDS) spreads of junior and senior bonds for G-SIBs has increased recently



Left panel: Decomposition of bank credit ratings into stand-alone rating (red) and ratings uplift from external support (blue). Asset-weighted averages. Based on a sample of about 50 large banks, using Fitch ratings. Source: 2018 BIS Annual Economic Report.

Right panel: CGFS Papers no. 60, Structural changes in banking after the crisis, 2018, Graph 19.

OTC derivatives markets are becoming safer, simpler, and more transparent (Graph 12).

- Meaningful progress has been made toward mitigating systemic risk in OTC derivatives markets. Central clearing has increased markedly in interest rate derivatives and credit default swaps, simplifying much of the previously complex and opaque web of derivatives exposures, while the central counterparties supporting that clearing are more resilient. In addition, more collateral is in place to reduce counterparty credit risks within the system.
- Derivatives markets are also more transparent, with authorities using trade reporting data to monitor systemic risk and for market surveillance. In many jurisdictions, aggregate or trade-by-trade data about derivatives transactions is publicly available.[34]
- At the same time, the systemic importance of CCPs has increased. Work by the FSB and SSBs is underway to promote CCP resilience, recovery planning and resolvability, including in relation to financial resources to support CCP resolution and the treatment of CCP equity in resolution.

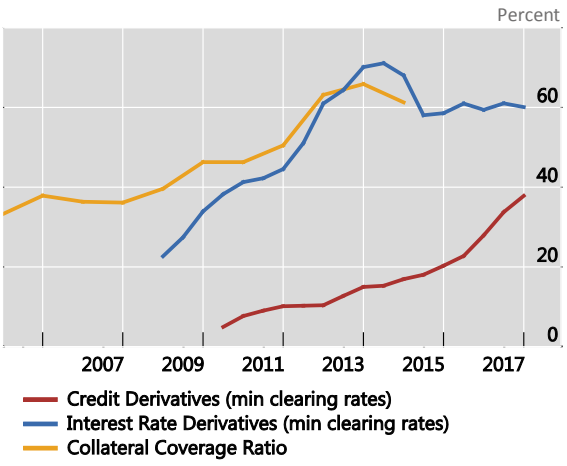
[33] The growth of Chinese G-SIBs is roughly in line with the overall growth of the Chinese banking system. See the FSB Global Shadow Banking Monitoring Report 2017.

[34] See the FSB Review of OTC derivatives market reform: Effectiveness and broader effects of the reforms (June 2017).

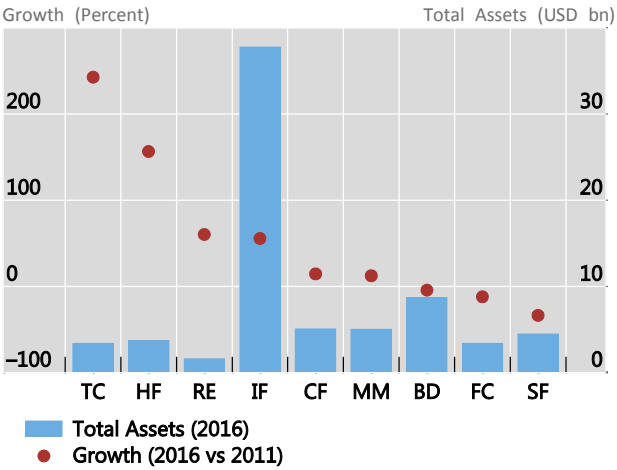
Improvements in resilience of financial markets

Graph 12

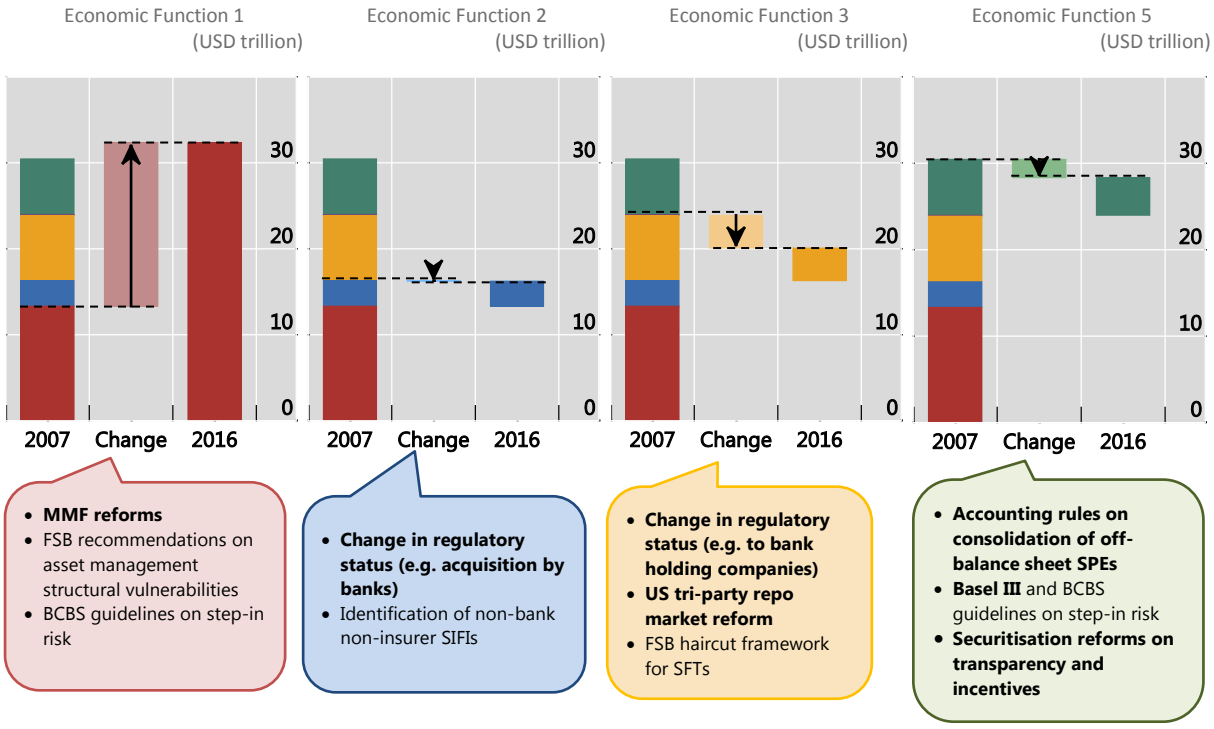
Clearing rates have increased over time, as have collateralisation rates



The composition of non-bank financial assets has shifted and legacy assets have declined.



The reforms are addressing the evolving system of non-bank financial intermediation



- Securitisation-based credit intermediation (EF5)
- Facilitation of credit intermediation (EF4)
- Market intermediation dependent on short-term funding (EF3)
- Lending dependent on short-term funding (EF2)
- Management of collective investment schemes that are susceptible to runs (EF1)

Top left: Minimum clearing rates are estimated as (CCP/2)/(1-(CCP/2)), where CCP represents the share of notional amounts outstanding that dealers report against CCPs. Under the extreme assumption that all outstanding positions with CCPs were initially inter-dealer contracts, CCPs' share is halved to adjust for the potential double-counting of trades. Source: Incentives to centrally clear over-the-counter (OTC) derivatives, Figure C.2, and 2017 Annual Report to the G20, Graph 11 (collateralisation rates).

Top right: Growth of major Other Financial Intermediary (OFI) subsectors, 2016 vs 2011. TR=Trust companies, HF= Hedge Funds, RE=Real estate investment trusts and RE funds, IF= Other Investment funds, CF=Captive Financial Institutions and Money Lenders, MM= Money Market Funds, BD=Broker Dealers, FC=Finance Companies, SF= Structured Finance Vehicles. Source: FSB Global Shadow Banking Monitoring Report 2017.

Bottom graph: The bubbles show examples of policy measures applied to the relevant economic functions since the financial crisis. Additional policy measures may have been introduced at national/regional and international levels. Measures in bold are in force. Economic Function 4 (EF4) is not shown in this graph as it represents only 0.4% of total assets for the narrow measure of non-bank financial intermediation. Source: Update based on the FSB Assessment of shadow banking activities, risks and the adequacy of post-crisis policy tools to address financial stability concerns (July 2017).

Those aspects of non-bank financial intermediation that contributed to the financial crisis have declined significantly and generally no longer pose financial stability risks (Graph 12).

- Asset-backed commercial paper programmes, structured investment vehicles and collateralised debt obligations of sub-prime and other lower quality credits have declined significantly. Reforms have also contributed to a reduction in vulnerabilities in areas such as money market funds and repos.[35]
- Aggregate interconnectedness between banks and non-banks through credit exposures and funding dependence, which could be a potential source of financial stability risk, has come down to pre-crisis levels.
- Other forms of non-bank financing, such as trust companies and investment funds, have grown rapidly since the crisis, underscoring the importance of effective operationalisation and implementation of policies agreed to address their structural vulnerabilities.

3.2 Supporting sound financial intermediation

The financial system has grown since the crisis, particularly non-bank finance (Graph 13).

- After a short dip associated with the crisis, global financial assets have continued their growth both in absolute terms and relative to GDP. This has been mirrored by an increase of total indebtedness of sovereigns, non-financial corporates and households.
- Although banks' assets have grown in absolute terms, their share has gradually dropped to about 40% of total financial system assets in recent years. The asset share of insurance companies, pension funds, investment funds and other financial intermediaries (OFIs) has grown over this period.
- Non-bank financial intermediation has grown in several AEs (particularly in the Euro area) and EMDEs since the crisis, while it has declined in some advanced Asian economies. At the aggregate level, non-bank credit has grown most rapidly in some of the EMDEs, albeit from low levels, but also for specific market segments in AEs.[36]
- Underlying drivers for the growth of non-bank financial intermediation include long-term structural (e.g. demographics leading to asset accumulation) and conjunctural (e.g.

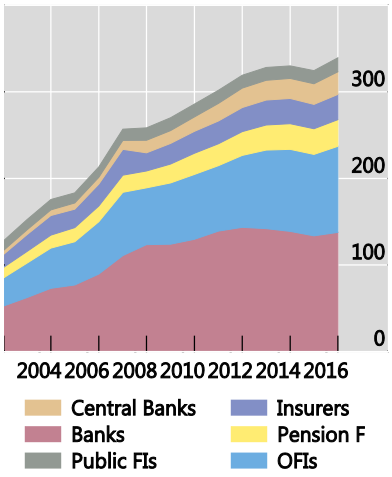
[35] See the FSB Assessment of shadow banking activities: risks and the adequacy of post-crisis policy tools to address financial stability concerns (July 2017).

[36] For example, non-bank lenders account for a growing share of mortgage origination in the US.

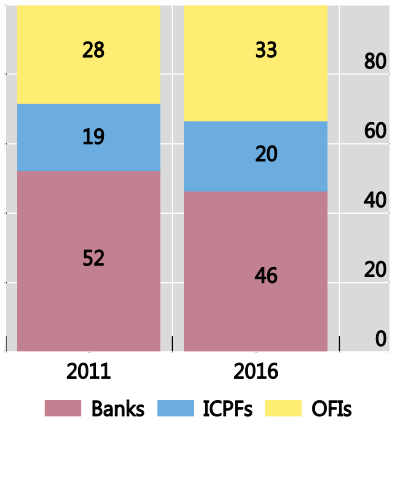
accommodative monetary policies, search for yield) factors. The reforms may have contributed to growth by increasing the relative cost of bank-based finance.[37]

The financial system continues to grow, particularly non-bank finance — Graph 13

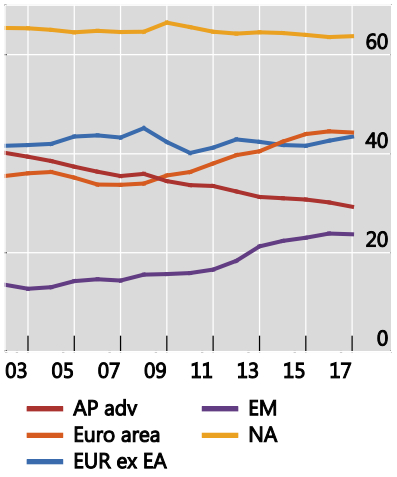
Global financial system assets have continued to grow, driven by non-banks



The share of total credit granted by insurers, pension funds and other non-bank financial intermediaries is growing



The share of non-bank lending to the private non-financial sector has increased in the Euro area and EMs



Left Panel: Assets of financial institutions, 21 jurisdictions and the Euro Area. Public FIs=Public Financial Institutions; OFIs=Other Financial Intermediaries (such as investment funds, hedge funds, broker dealers, money market funds etc.). Source: FSB Global Shadow Banking Monitoring Report 2017.

Middle panel: Data refers to credit granted to all sectors. The data is for 21 jurisdictions and the euro area. Exchange rate effects have been netted out using a constant exchange rate (from 2015). ICPFs = Insurance corporations and pension funds. OFIs = Other Financial Intermediaries. Source: FSB Global Shadow Banking Monitoring Report 2017.

Right panel: Portion of total credit to private non-financial sector granted by non-banks (debt securities, including bonds and short-term paper as well as currency/deposits). AP adv=Australia/Hong Kong/ Japan/Korea/Singapore. EUR ex EA=Switzerland/UK. NA=Canada/US. EM=Emerging Markets (Argentina/Brazil/ China/India/Indonesia/Mexico/Russia/Saudi Arabia/South Africa/Turkey). Source: BIS statistics on credit to the non-financial sector.

The improvement in resilience has been achieved without impeding the overall provision of credit to the real economy (Graph 14).

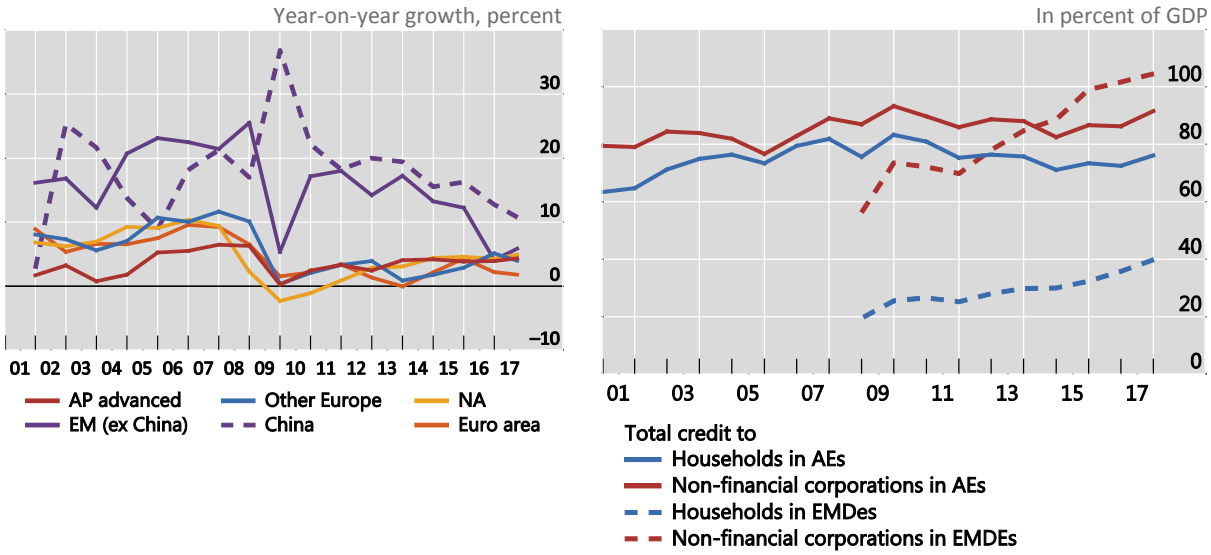
- Lending to non-financial firms and to households has been growing in all AE regions, in line with GDP. A similar growth pattern has been observed for bank lending.
- Credit growth in EMDEs has been elevated during the last 15 years. Although growth has slowed recently, there are no signs to suggest a shortage in the supply of financing.

[37] See, for example, the FSB Global Shadow Banking Monitoring Report 2017 and the 2018 BIS Annual Economic Report.

Credit to the private non-financial sector continues to grow in all regions — Graph 14

Total credit to the private non-financial sector has resumed in all regions and has recently slowed in EMDEs

This has led to a rise in credit relative to economic output in EMDEs



Left panel: Year-on-year growth of outstanding total lending to the private non-financial sector (all data as of Q4, geographical weights based on 2016 data). Asia-Pacific (AP) Advanced=Australia/Hong Kong/Japan/Korea/New Zealand/Singapore. Other Europe=Denmark/Norway/Sweden/Switzerland/UK. NA=Canada/US. EM=Emerging Markets (Argentina/Brazil/Chile/Colombia/India/Indonesia/Malaysia/Mexico/Russia/Saudi Arabia/South Africa/Thailand/Turkey). Source: BIS statistics on credit to the non-financial sector.

Right panel: Outstanding debt of households and non-financial corporates as a percent of GDP at the corresponding level of aggregation. Source: BIS statistics on credit to the non-financial sector.

The cost of bank credit and bond finance has remained generally low in recent years, supported by exceptionally accommodative monetary policies (Graph 15).

- Bond spreads for non-financial corporates spiked during the crisis and have been fairly stable since then.
- Bank lending rates have decreased while net interest margins have been fairly stable since the crisis, with some variation in levels across regions.

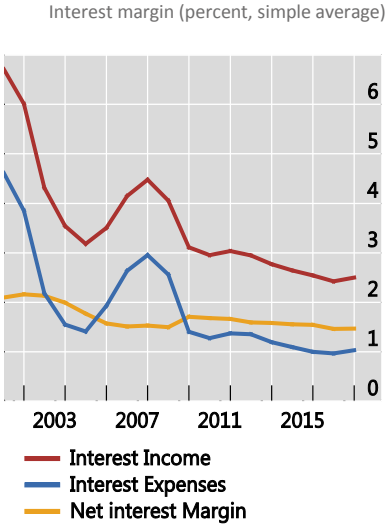
Evidence to date suggests that the financial crisis has slowed down, but not reversed, the long-term trend toward higher global financial integration.

- Global financial integration has increased in recent years,[38] driven mainly by an increase in equity and foreign direct investment, while debt financing is back to pre-crisis levels.
- The global integration of securities markets continues to grow. Non-financial corporates have accessed international debt markets and holding of cross-border securities have been growing. The availability of global financial infrastructures, such as CCPs clearing OTC derivatives in more than one jurisdiction, continues to increase.

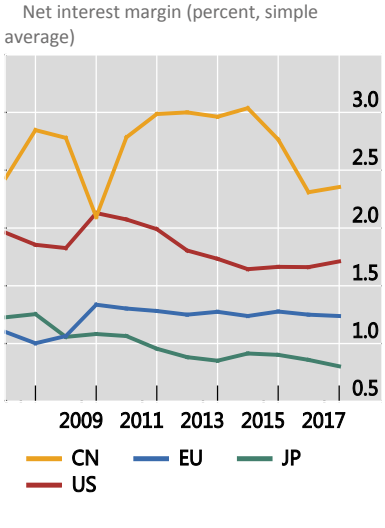
[38] Financial integration typically encompasses financial openness, free cross-border movement of capital and integration of financial services.

The cost of financing has remained low — Graph 15

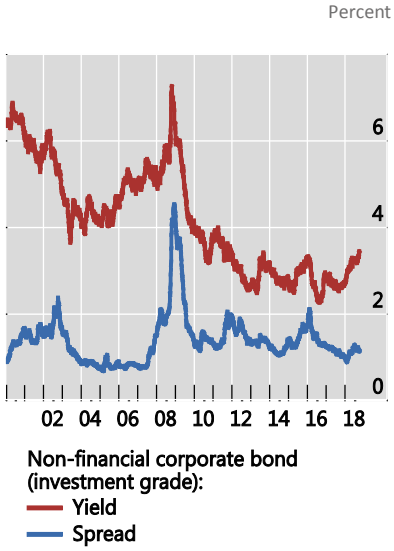
G-SIBs' net interest margins have been fairly stable over time…



…but have tended to vary across regions



Non-financial corporate bond yields and spreads remain at low levels



Left Panel: Interest income = Interest Income to total earning assets; Interest expenses = Interest expenses to total earning assets. Data is fairly sparse before 2005. Source: Fitch.

Middle panel: Source: Fitch.

Right panel: Global Non-Financial Corporates Index. Source: Bank of America Merrill Lynch.

Lending by international banks has shifted from cross-border towards more stable locally-funded lending (Graph 15).

- A decline in cross-border lending by European banks,[39] as well as reduced lending by other banks to the euro area, account for most of the retrenchment in international banking since the crisis. Cross-border lending between other regions has continued to expand.
- At the same time, international bank lending has become more local, funded by foreign banks' local affiliates in local currency.

There is little indication of a reduction since the financial crisis in cross-border lending by AE banks to EMDE borrowers (Graph 16).

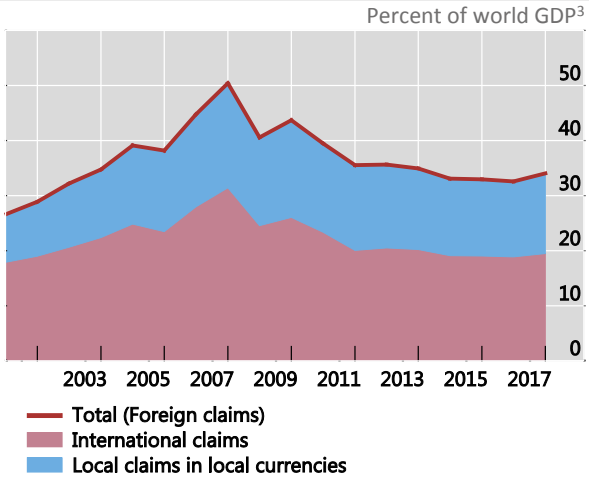
- Except for some European banks, cross-border lending by AE banks to EMDE borrowers has grown post crisis.[40] There is also some evidence for increased intraregional lending within EMDEs, in particular in Latin America and Asia.

[39] More generally, a substantial portion of the post-crisis decline in international lending is accounted for by interbank lending. See the FSB's 2017 Annual Report to the G20, Graph 21 (top right graph).

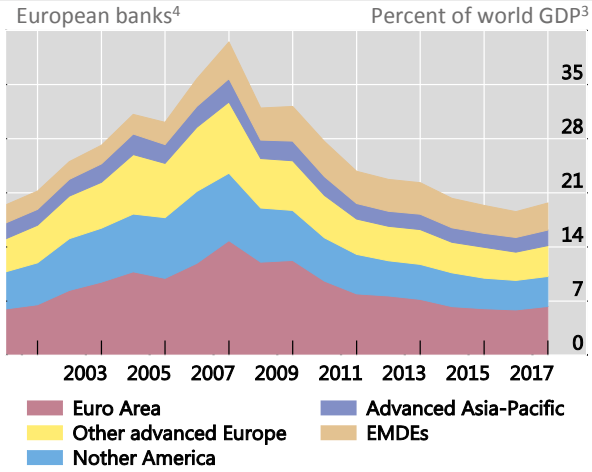
[40] Underlying factors that may have contributed to the reduced presence and activities of global banks in some EMDEs include the way that home jurisdictions of hosted global banks are implementing certain reforms (e.g. risk weighting of host jurisdictions' debt, delays in bilateral recognition/equivalence assessments on OTC derivatives), the adoption of national policy initiatives to improve financial stability that go beyond the internationally agreed standards (e.g. structural banking measures), but also broader macroeconomic developments (e.g. slower growth and drop in commodity prices) and the still-evolving business models of global banks.

International bank lending has declined and its structure shifted post-crisis[1,2] Graph 16

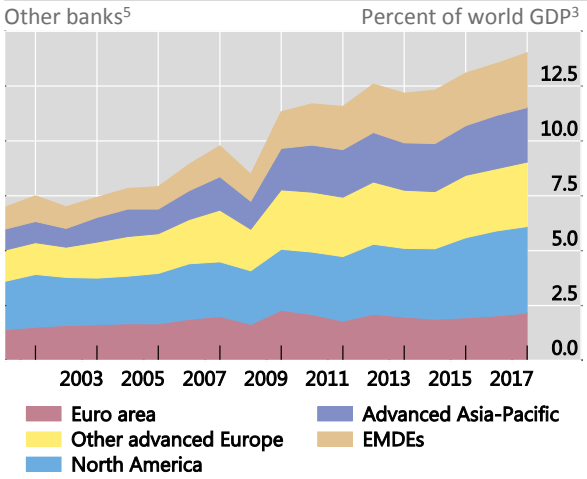
International bank claims have contracted more than foreign banks' local claims



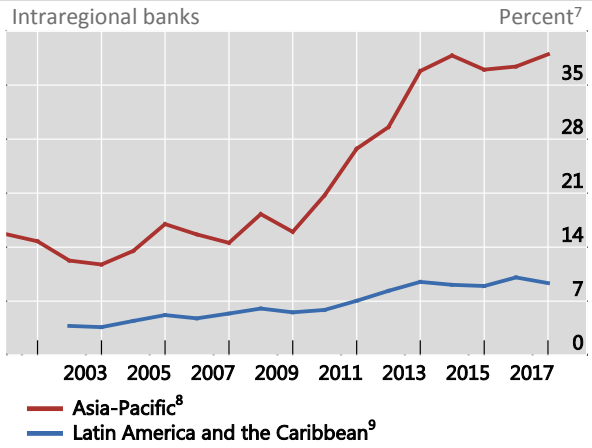
European banks' foreign claims on entities in advanced economies have dropped substantially



Other banks' foreign claims on entities in all regions have continued to increase



The share of intraregional claims has increased in EMDEs in Asia and Latin America[6]



[1] See below a detailed definition of international claims and foreign claims by banks headquartered in the BIS reporting countries, which exclude claims on residents of banks' home country. [2] Counterparty country regions as defined by IMF, including banks and non-banks [3] Amounts of outstanding claims as a percentage of World GDP converted to US dollars at the exchange rate prevailing on respective reference dates. [4] Foreign claims by banks headquartered in reporting euro area countries (Austria, Belgium, Germany, Spain, Finland, France, Greece, Ireland, Italy, Luxembourg, Netherlands and Portugal); and those in other European countries (Denmark, Norway, Switzerland, Sweden and United Kingdom). [5] Foreign claims by banks headquartered in North America (Canada and United States), Advanced Asia pacific (Australia, Chinese Taipei, Hong Kong SAR, Japan, Singapore and South Korea) and Emerging economies (Brazil, Chile, India, Mexico, Panama and Turkey). [6] Relate to international claims. [7] As a percentage of total international claims by all banks in BIS reporting countries . [8] For Asia-Pacific, sum of international claims on the region of banks headquartered in Chinese Taipei, Hong Kong, India, Korea, Singapore and the offices of banks located in the region which have a parent institution from a non-BIS reporting country (assuming these are headquartered in Asia). [9] For Latin America and the Caribbean, sum of international claims on the region of regional banks (Brazil, Chile, Mexico, Panama) and the offices of banks located in the region which have a parent institution from a non-BIS reporting country (assuming these are headquartered in the region).

Top left panel: Foreign claims are BIS reporting banks' worldwide consolidated financial claims on counterparties outside their home country. International claims are cross-border claims in any currency and local claims of foreign affiliates denominated in non-local currencies. Local claims in local currencies are claims with a counterparty located in the same country as the banking office and denominated in domestic currency. See BIS Guide for International Banking Statistics.

Top panels and bottom left panel: All series relate to foreign claims. Bottom right panel: The series show international claims (see CGFS Papers no. 60, Structural changes in banking after the crisis, 2018).

Sources: BIS consolidated banking statistics on immediate counterparty basis; IMF World Economic Outlook (April 2018).

4. Evaluations of the effects of reforms

The FSB, in collaboration with the SSBs, published in July 2017 a framework to analyse whether the G20 financial regulatory reforms are working as intended (Box 1).

- The findings from the first two FSB evaluations under the framework are presented below.
- Additional evaluations are underway or planned on the effects of reforms on the financing of SMEs and on policies aimed at ending TBTF.

Box 1: FSB Framework for Post-implementation Evaluation of Effects of Reforms

With the main elements of the post-crisis reforms agreed and implementation of some core reforms at an advanced stage, initial analysis of the effects of those reforms on overall resilience, the orderly functioning of markets, global financial integration, and the cost and availability of financing is becoming possible.

The FSB published in July 2017 the Framework for Post-Implementation Evaluation of the Effects of the G20 Financial Regulatory Reforms. The framework aims to guide analyses of whether the reforms are achieving their intended outcomes, and help identify any material unintended consequences that may have to be addressed without compromising on the objectives of the reforms. Evaluations, if findings warrant it, could provide a basis for possible fine-tuning of reforms, without implying a scaling back of those reforms or undermining members' commitment to implement them. This dynamic implementation of the reforms will ensure that reforms remain fit for purpose amidst changing circumstances.

4.1 Evaluation on financing of infrastructure investment[41]

The FSB has assessed the effects of G20 financial reforms on infrastructure finance (IF).

- The evaluation forms part of a broader evaluation of the effects of reforms on financial intermediation, and complements work under the Argentine G20 Presidency to develop infrastructure as an asset class. [42] It examined IF provided by the financial sector in the form of corporate and project debt financing (loans and bonds), covering the types of financing that are most likely to be directly affected by financial regulation.
- The evaluation focused on the reforms that have been largely implemented and are most relevant for IF, i.e. the initial Basel III capital and liquidity requirements (agreed in 2010) and OTC derivatives reforms. Other G20 reforms that may be relevant for IF but are at an earlier implementation stage (e.g. Basel III reforms finalised in December 2017, investment funds rules, accounting standards) were reviewed qualitatively, given the lack of data required for a quantitative assessment. National and regional regulations for insurers and pension funds may affect IF, and these regulations were also considered qualitatively.
- The evaluation drew on a broad range of information sources and was based on multiple analyses, including: empirical analysis using micro and aggregate data on infrastructure investment; a public survey on trends in IF and relevant drivers; extensive engagement

41 See the FSB Evaluation of the effects of financial regulatory reforms on infrastructure finance (November 2018).

42 The Argentine G20 Presidency launched an Infrastructure Working Group and agreed to facilitate necessary conditions to develop infrastructure as an asset class. To guide this work, the G20 Finance Ministers and Central Bank Governors endorsed a Roadmap to Infrastructure as an Asset Class.

with IF experts, including via a workshop with industry and interviews with market participants; a literature review; and public feedback on the consultative report.

The overall amount of IF has grown in recent years after a temporary drop during the financial crisis, mainly due to a growth in market-based finance, while credit prices have returned to lower levels in recent years following a spike during the crisis.

- The growth has been slower than in the pre-crisis years and is concentrated mainly within AEs. In the case of EMDEs, overall growth has been more contained, although there has been a mild upward trend in recent years.
- Market-based finance – mainly project and (particularly) corporate bond issuance as well as non-bank financing – has accounted for most of the IF growth in AEs in recent years. An important driver for is that infrastructure assets have become increasingly attractive for investors in search for yield.

There are some key differences in the provision of IF in EMDEs compared to AEs.

- EMDEs rely much more on bank loans for IF; bond issuance has expanded in recent years, but from a low base; a large proportion of IF in EMDEs takes place on a cross-border basis, reflecting greater dependence on foreign sources of capital; and a significant part of that financing is provided primarily in USD, although the importance of EM currencies has increased markedly in recent years.

Empirical analysis and other qualitative sources suggest that the effect of G20 financial reforms on IF has been of a second order relative to other factors (Graph 17).

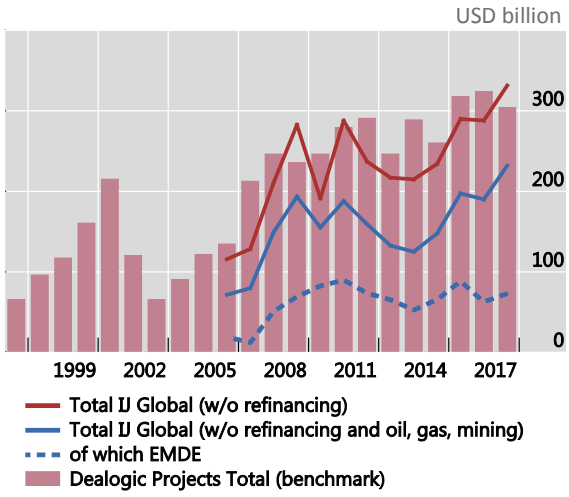
- The analysis does not identify a significant effect of the initial Basel III reforms on volumes or prices across different groups of institutions (e.g. banks with weaker solvency/liquidity profiles vs stronger banks, G-SIBs vs other banks). In addition, bank-provided IF does not seem to have been affected disproportionately compared to other types of bank lending.
- The analysis also suggests that the G20 banking reforms may have contributed to the substitution in the volume of bank-based IF by market-based financing in AEs, although they are only one of the drivers for this rebalancing. Such a shift, particularly during later stages of the investment life cycle, might contribute to a better alignment of providers and users of finance based on their respective investment horizons and risk-bearing capacity and may contribute to the stability of IF over time.
- These results are broadly similar for both AEs and EMDEs, and consistent with the existing literature and feedback from market participants, which identify the macro-financial environment (including accommodative monetary policies), government policy and institutional factors as the main IF drivers.
- For G-SIBs, the analysis shows that the reforms have contributed to shorter average maturities of their infrastructure loans, which is not necessarily unintended given that reducing banks' maturity mismatches was one of the objectives of the reforms.

For the financial reforms considered by this evaluation, the analysis did not identify material negative effects on IF to date.

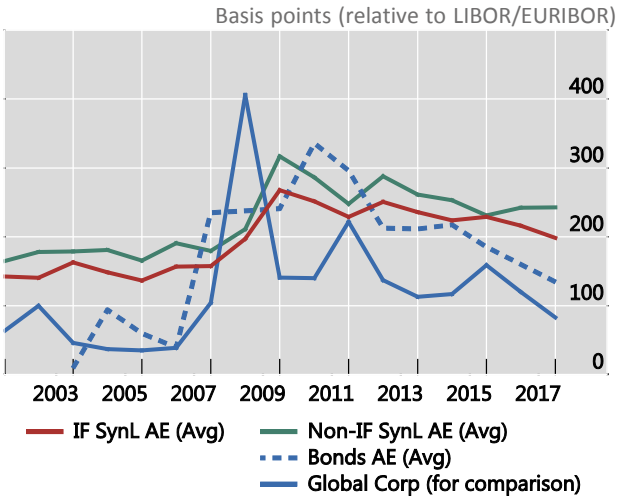
- This conclusion is consistent with the observation from the literature and feedback from market participants that other, non-regulatory factors are important impediments to IF. Many of these factors are already being considered elsewhere, including the G20's work to develop infrastructure as an asset class.
- The conclusion also does not preclude SSBs from continuing to assess the extent to which their standards are adequately calibrated to the particular characteristics and risks of IF. The feasibility and desirability of a different regulatory calibration for different sectors go beyond the scope of this evaluation, and would depend on factors such as the existence of a harmonised definition for IF, data availability, and considerations on the balance between complexity and risk-sensitivity of regulation.

The effect of G20 financial reforms on IF has been of second order relative to other factors. **Graph 17**

Total IF provided by the financial sector has continued to grow in recent years



There is no differential effects on prices for IF relative to other types of financing



Left graph: The graph shows total volume of IF based on IJ Global (lines) and Dealogic (bars), excluding refinancing (red line) and the oil, gas and mining sectors (blue line and corresponding series for the AEs and EMDEs). The series provided by Dealogic go back to the 1990s, while IJ Global data is limited before 2005. All figures are based on IF subject to financial close in that calendar year, i.e. a flow type metric (the same is true throughout the report).

Right graph: The rates are in basis points over LIBOR (or EURIBOR). The series for non-IF syndicated loans and the Merrill Lynch Global Corporates Index are added as a benchmark. SynL = Syndicated loans.

Source: FSB Evaluation of the effects of financial regulatory reforms on infrastructure finance (November 2018).

4.2 Evaluation on incentives to centrally clear OTC derivatives[43]

The FSB, BCBS, CPMI and IOSCO re-examined the effects of G20 reforms on incentives to clear centrally OTC derivatives.

- The central clearing of standardised OTC derivatives is a pillar of the G20 Leaders' commitments to reform OTC derivatives markets. A number of post-crisis reforms are, directly or indirectly, relevant to incentives to centrally clear. A large majority of the relevant international standards have been agreed upon and are being implemented (section 2).

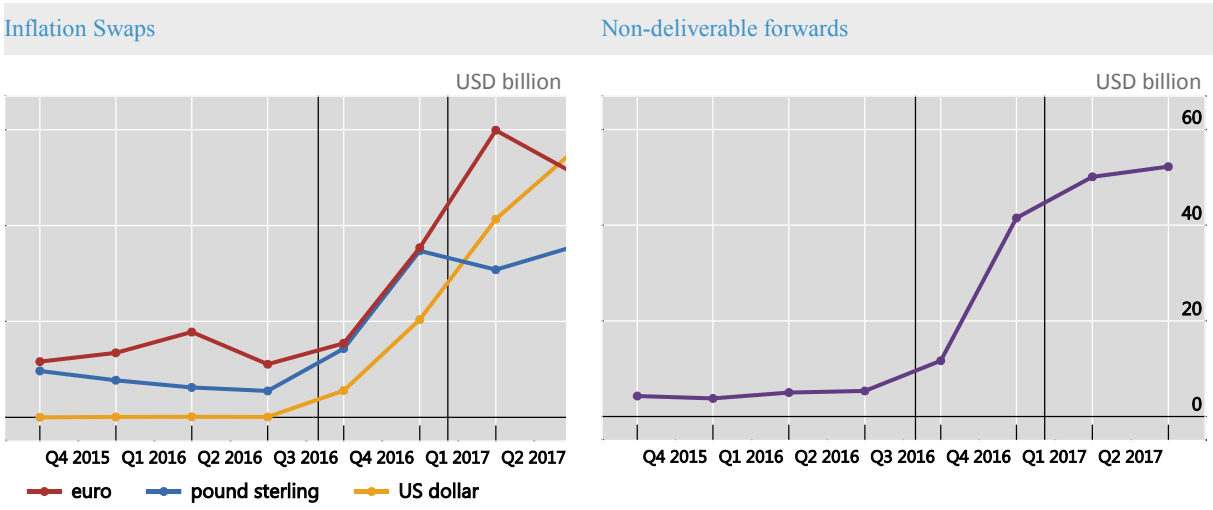
The relevant post-crisis reforms are found to create an overall incentive, at least for dealers and larger and more active clients, to centrally clear OTC derivatives, but non-regulatory factors are also relevant (Graph 18).

- The changes observed in OTC derivatives markets – i.e. marked increases in clearing rates for many types of derivatives – are consistent with the G20 Leaders' objective of promoting central clearing as part of mitigating systemic risk and making derivatives markets safer.

[43] See the FSB-BCBS-CPMI-IOSCO Incentives to centrally clear over-the-counter (OTC) derivatives: A post-implementation evaluation of the effects of the G20 financial regulatory reforms – final report (November 2018).

- The reforms – particularly capital requirements, clearing mandates and margin requirements for non-centrally cleared derivatives – are achieving their goals of promoting central clearing, especially for the most systemic market participants. This is consistent with the goal of reducing complexity and improving transparency and standardisation in the OTC derivatives markets. Beyond the systemic core of the derivatives network of CCPs, dealers/clearing service providers and larger, more active clients, the incentives are less strong.
- The preferential capital treatment of centrally cleared derivatives is considered an important incentive for dealer banks. Analysis of quantitative survey results suggests that the incentive to centrally clear OTC derivatives is also strong where standards requiring the exchange of initial margin for uncleared derivatives trades are in effect. This finding generally holds across a range of product types in different asset classes, but it is not universal. It is supported by regulatory data showing a marked increase in clearing volumes for some non-mandated OTC derivatives around the implementation dates of the margin requirements for uncleared derivatives.
- Surveys and market outreach show that market participants, especially larger firms, consider that factors such as market liquidity, counterparty credit risk management and netting efficiencies are also important factors for incentives to centrally clear. Regulation can interact with such factors to affect incentives. For example, clearing mandates may shift liquidity into central clearing. Once liquidity is established, market participants may also wish to clear products that are not subject to clearing mandates, perhaps to benefit from netting opportunities or a lower capital requirement. On the other hand, the relatively higher fixed costs of accessing central clearing can have a material impact on incentives too, especially for smaller, lower activity firms.

The cleared notional of inflation swaps (left) and non-deliverable forwards (right) over time **Graph 18**



The vertical lines indicate 1 September 2016 (US/CAN/JPN margin requirements for uncleared derivatives) and 4 February 2017 (EMIR requirements for the same). Figures are not adjusted for underlying market changes in these product types.

Source: CPMI and IOSCO quantitative disclosures.

The evaluation has identified specific issues for attention, such as incentives to clear OTC derivatives for market participants not considered systemically important and specific provisions for the treatment of initial margin.

- While there are challenges in identifying effects on small and less active clients in regulatory data, survey responses and information from market outreach suggest that the incentives for them to centrally clear are mixed. Some clients reported a preference not to centrally clear when not required to do so by a clearing mandate.
- The provision of client clearing for OTC derivatives remains generally concentrated. Such concentration in clearing service provision could amplify the consequences of the failure or withdrawal of a major provider. In particular, concerns have been expressed about the ability to port client positions and collateral in this situation. This could impact clients' incentives to centrally clear.
- Survey data, research and market outreach suggests that some regulations aimed at improving institutional resilience may in some circumstances be discouraging individual firms from providing client clearing services. These include the leverage ratio's treatment of client initial margin for cleared derivatives; and the feedthrough of this to the size category of the G-SIB methodology. This may in turn affect access challenges for clients and the concentration of client clearing service provision.
- The findings from the report will inform relevant SSBs regarding any subsequent policy efforts and potential adjustments, bearing in mind the original objectives of the reforms. This does not imply a scaling back of those reforms or an undermining of members' commitment to implement them.
- Following this evaluation and its own review of the impact of the leverage ratio on client clearing, the BCBS published in October 2018 a consultation paper on whether the leverage exposure measure should be revised and, if so, on targeted revision options.[44]

[44] See the BCBS consultative document on the Leverage ratio treatment of client cleared derivatives (October 2018).

5. Looking Ahead

5.1 Financial stability policy that supports strong and sustainable growth

The overall trends on resilience and financial intermediation have been favourable so far, but vigilance is needed to effectively address shifting risks in the global financial system.

- While the observed adjustments to date suggest substantial net benefits of the reforms, more work is needed to analyse whether the reforms are working as intended.
- The global financial system keeps evolving, with regulatory reforms being only one of several important drivers. Global debt is growing, the composition of global financial assets is changing across sectors and regions, and technological progress leaves its footprint on a growing share of market segments and institutions.
- These developments carry implications for the resilience of markets and the openness and integration of the financial system. In turn, these may affect the provision of financial services and the G20 objective of promoting strong, sustainable and balanced growth.

Market-based indicators reflect banks' enhanced regulatory risk profiles and ongoing adjustments of business models (Graph 19).

- Market-based indicators of risk, such as credit default swap (CDS) premia and market-based leverage ratios, suggest a perceived reduction in bank risk since the crisis.
- Market-to-book ratios broadly reflect current bank profitability trends and prospects in different regions.[45]
- These metrics suggest that market participants expect banks to further adjust their business models, while recognising that the pre-crisis levels of these metrics are not the right benchmark.

The FSB continues to monitor and assess the growth and risks in non-bank financial intermediation.

- The shift toward non-bank financing represents a welcome increase in diversity of the sources of finance supporting economic activity and is therefore in line with the G20 reform objectives, provided that such financing is resilient.
- To this end, the FSB has been monitoring and, if applicable, addressing any associated financial stability risks, such as for bank-like activities involving maturity and/or liquidity transformation and leverage, including through interconnections with the banking system.

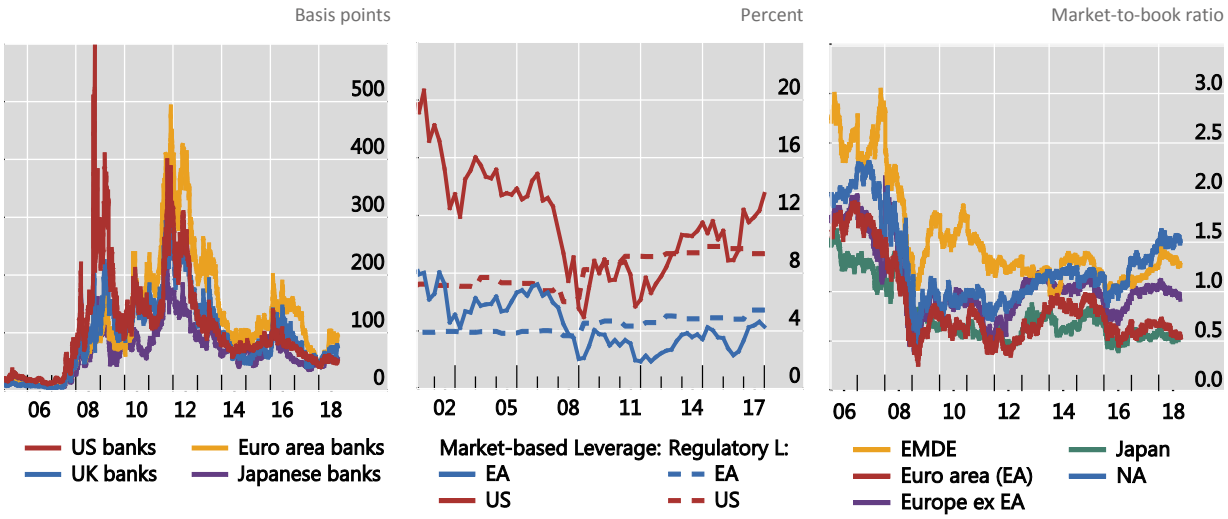
[45] See, for example, The ABCs of bank PBRs: What drives bank price-to-book ratios? by Bogdanova et al. (BIS Quarterly Review, March 2018).

Market prices reflect enhanced bank resilience but also ongoing adjustments — Graph 19

Bank credit default swap (CDS) premia are lower than during the crisis but remain above pre-crisis levels[1]

Market-based leverage ratios lag behind regulatory leverage ratios[2]

Some banks' market-to-book ratios remain low, signaling concerns about their profitability and business models



[1] Simple average across major banks in the US (Bank of America, Citigroup, Goldman Sachs, JPMorgan Chase, Morgan Stanley), euro area (Banco Santander, BNP Paribas, Crédit Agricole, Deutsche Bank, ING Group, Société Générale, UniCredit SpA), UK (Barclays, HSBC, Lloyds, RBS) and Japan (Bank of Tokyo-Mitsubishi UFJ, Mizuho, Sumitomo Mitsui). [2] Asset-weighted averages of simplified regulatory leverage ratios (i.e. common equity to total assets) and market value-based leverage ratios by economy; based on 73 banks and not adjusted for national accounting differences. EA= Euro area.

Source for left panel: Markit. Source for middle panel: 2018 BIS Annual Economic Report. Source for right panel: Datastream.

Recent analysis has continued to examine the potential implications of changes in market structures on market liquidity conditions under stress (Graph 20).

- Previous analyses suggested that some reduction of liquidity in normal times from pre-crisis levels, owing to a better recognition of the costs involved in providing liquidity services, is an expected outcome of reforms that strengthen financial stability.
- One implication of the change in market structure on liquidity in less liquid securities markets could be that large orders are more difficult to execute under stressed market conditions. Episodes of flash events (i.e. intraday volatility associated with short-term illiquidity) in markets that tend to be more liquid have taken place in recent years without damage to financial stability.[46]
- Institutional investors who have increased their shares of riskier assets and the duration of their portfolio[47] have not increased their liquidity buffers to cope with potential redemption risks. High concentration of assets under management could amplify stress conditions.

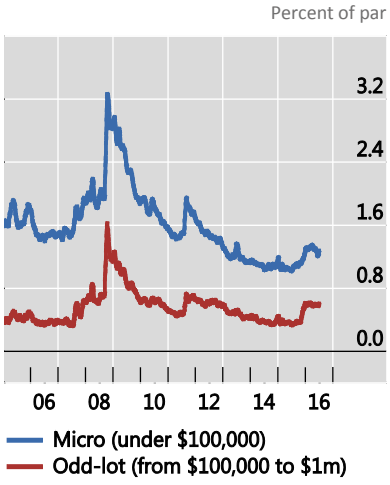
[46] Bond mutual funds have managed significant outflows in the past (e.g. during previous episodes of monetary policy tightening) and have generally not disrupted financial markets. Yet, past episodes of large redemptions have occurred at times when fund holdings were much smaller, in absolute terms and relative to trading volumes and dealer inventories.

[47] See, for example, Chart 3.27 of the ECB's Financial Stability Review (May 2018).

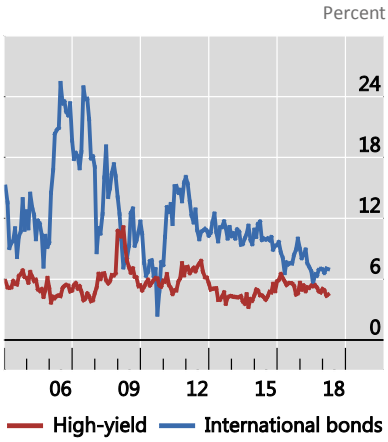
- The FSB has continued to evaluate the impact of portfolio rebalancing behaviour of asset managers and institutional investors (especially investment funds' liquidity management) under different scenarios and potential implications for financial stability.[48]

Indicators of market liquidity and structural changes — Graph 20

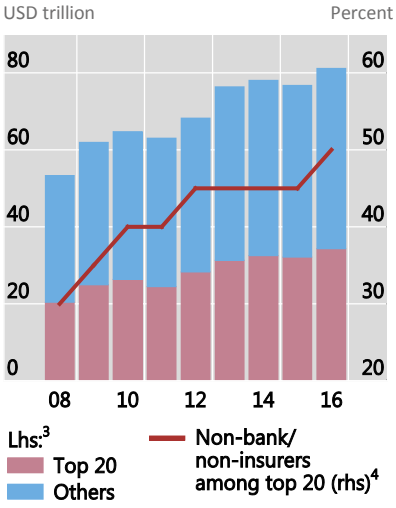
The costs of institutitutional trades have increased recently[1]



Mutual funds' liquid asset holdings have been fairly stable since the crisis[2]



Concentration in asset management industry has increased



[1] Bid-ask spreads for US corporate bonds as estimated in Adrian et al (2017) by trade size. [2] Liquid asset holdings as a percentage of funds' total net assets; by fund category. [3] Assets under management. [4] Percentage share of non-bank/non-insurers among the top 20 asset managers.

Sources: Left and middle panel: Market liquidity after the financial crisis by Adrian et al (2017). Right panel: 2018 BIS Annual Economic Report.

The digitalisation of finance has the potential to significantly change the current functioning of the global financial system, which raises a number of possible benefits and risks (Box 2).[49]

- The digitalisation of finance is resulting in new business models, applications, processes and products, with an associated effect on financial markets and institutions and the provision of financial services. There are potential benefits and risks to financial stability for policymakers to consider, along with effects on consumer and investor protection, market integrity, and financial inclusion.
- The FSB and other international organisations have been monitoring digitalisation trends, with the objective of harnessing the benefits[50] while mitigating risks.[51] The FSB has

[48] This work included a systemic stress simulation; two workshops on systemic stress, investor behaviours and market liquidity; an institutional investor survey conducted across most FSB jurisdictions to consider potential portfolio rebalancing under certain downside scenarios; and an assessment of institutional investor business models to understand factors that can influence portfolio rebalancing during normal and stressed market conditions.

[49] See the FSB report on Financial Stability Implications from FinTech: Supervisory and Regulatory Issues that Merit Authorities' Attention (June 2017).

[50] Potential benefits include decentralisation and increased intermediation by non-financial entities; greater efficiency, transparency, competition and resilience of the financial system; and greater financial inclusion and economic growth, particularly in emerging market and developing economies.

[51] Potential risks are micro-financial (e.g. credit risk, leverage, liquidity risk, maturity mismatch and operational risks such as cyber and legal risks) and macro-financial (e.g. non-sustainable credit growth, increased interconnectedness or correlation, incentives for greater risk-taking by incumbent firms, procyclicality, contagion and systemic importance).

examined the financial stability implications of FinTech credit, crypto-assets, distributed ledger technology, and applications of artificial intelligence and machine learning in finance (see Box 2). This work has resulted in a better understanding of the benefits and risks that FinTech may pose and allows for an ongoing dialogue between public, private and academic stakeholders.

- In its work to date, the FSB has concluded that there are currently no compelling financial stability risks from these FinTech innovations. However, given rapid growth, this assessment could change in the future.

Box 2: FSB work on the digitalisation of finance

Scope of activities: The FSB developed a framework that defines the scope of FinTech activities by their primary economic functions and activities – rather than the underlying technologies and the regulatory classification – and identifies the potential benefits and risks to financial stability. This provides a basis for analysis and monitoring. As most FinTech activities are currently small compared to the overall financial system, the analysis focuses on the potential benefits and risks. Nonetheless, international bodies and national authorities should consider taking FinTech into account in their existing risk assessments and regulatory frameworks, in light of its rapid evolution. Indeed, many authorities have already made regulatory changes to adapt to FinTech activities.

Regulatory and supervisory issues around FinTech: In addition to potential financial stability implications from FinTech, the FSB has identified 10 supervisory and regulatory issues that merit authorities' attention. Three are seen as priorities for international collaboration: (i) managing operational risk from third-party service providers; (ii) mitigating cyber risks; and (iii) monitoring macrofinancial risks that could emerge as FinTech activities increase.

FinTech credit: Together with the Committee on the Global Financial System (CGFS), the FSB has analysed financial stability implications of FinTech credit, or credit activity facilitated by online platforms.[52] The report found that these innovations, if they were to grow larger, could result in greater financial inclusion, alternative funding and investment options, and pressure on commercial banks to improve efficiency. Yet FinTech credit business models could also lead to weaker lending standards, more procyclical credit provision and reduced effectiveness of credit-related countercyclical macroprudential measures. These markets have not yet been tested through a full business cycle, and recent credit losses in some jurisdictions illustrate challenges around risk management.[53]

Crypto-assets: The FSB has developed a framework, in collaboration with CPMI, to monitor the financial stability implications of the developments in crypto-asset markets. Recent reports set out the metrics that the FSB will use to monitor developments in crypto-asset markets as part of the FSB's ongoing assessment of vulnerabilities in the financial system.[54] The reports also describe work of CPMI, IOSCO and BCBS in areas of their respective mandates.

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52 FinTech credit: market structure, business models and financial stability implications by the FSB and CGFS (May 2017).

53 See FinTech credit markets around the world: size, drivers and policy issues by Claessens et al (BIS Quarterly Review, September 2018).

54 See Crypto-assets: Report to the G20 on the work of the FSB and standard-setting bodies (July 2018) and Crypto-asset markets: Potential channels for future financial stability implications (October 2018) by the FSB.

Artificial intelligence and machine learning: In a recent report,[55] the FSB considers the financial stability implications of the growing use of artificial intelligence (AI) and machine learning in financial services. Institutions are automating client interactions and optimising scarce capital with AI and machine learning techniques, as well as back-testing models and analysing the market impact of trading large positions. Meanwhile, hedge funds, broker-dealers and other firms are using it to find signals for higher uncorrelated returns and to optimise trade execution. Both public and private sector institutions may use these technologies for regulatory compliance, surveillance, data quality assessment and fraud detection. The analysis reveals potential benefits and risks for financial stability that should be monitored as the technology is adopted and as more data becomes available.

Cyber risk: Cyber incidents are one potential threat to the financial system. Recognising this risk, authorities across the globe have taken regulatory and supervisory steps designed to facilitate both the mitigation of cyber risk by financial institutions and their effective response to, and recovery from, cyber incidents. With the aim of enhancing cross-border cooperation, the FSB delivered in 2017, at the request of the G20, a stocktake of existing regulations and supervisory practices in G20 jurisdictions, as well as existing international guidance and continued its work in 2018 by publishing a Cyber Lexicon.[56] The FSB will commence a project to develop effective practices relating to a financial institution's response to, and recovery from, a cyber incident, on which a progress report will be published by mid-2019.

International cooperation: There are clear benefits to greater international cooperation given the commonalities and global dimension of FinTech activities. Increased cooperation will be particularly important to mitigate the risk of fragmentation or divergence in regulatory frameworks, which could impede the development and diffusion of beneficial innovations in financial services, and limit the effectiveness of efforts to promote financial stability. These issues are among the priorities of the Japanese G20 Presidency in 2019.

5.2 Reinforcing global regulatory cooperation

An open and integrated global financial system has major economic benefits.

- The financial crisis showed how interconnected the global financial system is. G20 reforms promote a global financial system that is resilient against shocks. The benefits of such a system are greatest if it is open and integrated.
- Such a system contributes to the efficient allocation of global savings across countries, and supports international trade and investment through financial deepening, risk sharing and diversification across institutions and markets, with positive effects on growth.

Significant cooperation between jurisdictions in the aftermath of the financial crisis has allowed for the design of new frameworks to fix the fault lines revealed by the crisis.

- Authorities worked together in developing the G20 reforms, recognising the benefits of consistent minimum international standards in creating a resilient and open global financial system. The greater promulgation of such standards reflects the fact that financial institutions and markets are increasingly global and operate across borders.

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[55] See Artificial intelligence and machine learning in financial services: market developments and financial stability implications by the FSB (November 2017).

[56] See the Cyber Lexicon by the FSB (November 2018).

- Regulatory and supervisory cooperation is necessary for consistent implementation of international standards, and is the basis for promoting a level playing field and reducing opportunities for arbitrage. It also helps avoid fragmentation of pools of funding and liquidity, as well as reducing inefficiencies and frictions that constrain the risk-sharing capacity of the global market and increase the costs of doing business.
- Maintaining this level of cooperation is critical as memories of the crisis fade, as implementation fatigue sets in, and as member authorities' focus shifts to other areas.

Such cooperation is necessary to ensure full, timely and consistent implementation of the G20 reforms. While there has been some progress...

- There is evidence of increased home-host supervisory cooperation and information exchange through supervisory colleges and other arrangements. BCBS members have established a framework based on jurisdictional reciprocity for the application of the countercyclical capital buffer to internationally active banks in those jurisdictions.
- Home resolution authorities of G-SIBs have enhanced legal powers to share information, have developed firm-specific CoAgs and are coordinating work through CMGs.
- Authorities continue to engage bilaterally and in multilateral fora to address identified cross-border issues on OTC derivatives markets. Advances have been made in removing legal barriers to sharing TR data, cross-border recognition of CCPs, as well as in formalising legal powers to exercise deference to other regimes when they achieve similar outcomes.

... **challenges still persist and new market developments and policy initiatives make it even more important for jurisdictions to work together.**

- Such challenges include: delays in implementation as supervisory authorities wait on each other to act first; national regulatory initiatives that may result in ring-fencing; limited mechanisms for giving cross-border effect to resolution actions; inconsistency or duplication in the application of jurisdictional requirements in cross-border contexts; and obstacles to the aggregation and use of data for systemic risk analysis.
- The ability and willingness of financial supervisory and regulatory authorities to share information on a cross-border basis is foundational to cooperation and necessary given their public mandates. Lack of trust, legal barriers as well as bank secrecy laws can sometimes make information-sharing difficult, and thereby impede the effectiveness and enforceability of financial regulatory reforms. It is important for regulators to have access to data required to carry out supervisory and enforcement mandates while maintaining regard for data privacy.
- Access to correspondent banking relationships has continued to decline. The FSB has put in place a four-point action plan to assess and address the issue. To be effective, this action plan needs to be implemented by the private sector, national and international authorities.[57]
- Cyber attacks have the potential to disrupt financial services that are crucial to both national and international financial systems and to endanger financial stability. Authorities across the globe need to continue to work together to facilitate both the mitigation of cyber risk by financial institutions, and their effective response to, and recovery from, cyber incidents.
- Broader macroeconomic developments as well as recent episodes of financial market volatility also call for enhanced regulatory cooperation.

The FSB and SSBs will continue to promote approaches to deepen cross-border cooperation and help build trust.

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[57] See the FSB action plan to assess and address the decline in correspondent banking (March 2018) and the Progress report to G20 Summit of November 2018.

- This includes developing cooperation and data harmonisation standards, sharing information and good practices, examining implementation challenges, seeking input and feedback from external stakeholders, and evaluating the effects of reforms.
- Areas where cooperation among authorities might be enhanced should continue to be identified and addressed to prevent market fragmentation.
- The FSB has begun to engage with the industry on this issue, and will continue to explore ways to build trust and address key cross-border cooperation challenges.

Annex 1: Monitoring and evaluations forward planner

Reform area	Body	Monitoring and evaluation activity	Expected publication date
Building resilient financial institutions	BCBS	• **Evaluations of Basel III standards**	• **Ongoing**
		• Progress report on adoption of Basel regulatory framework (semi-annual)	• 2019Q2
		• RCAP post-assessment follow-up reports (annual)	• 2019H1
		• Jurisdictional RCAP assessments of NSFR and large exposures standards	• 2018-2021
		• Basel III monitoring report (semi-annual)	• 2019Q2
	FSB	• Sixth progress report on compensation practices	• 2019H1
Ending too-big-to-fail	FSB	• **Evaluation of the effects of too-big-to-fail reforms**	• **2020H2**
		• Review of the technical implementation of the TLAC standard	• 2019Q2
		• Thematic peer review on bank resolution planning	• 2019Q2
		• Resolution progress report	• 2019Q2
	BCBS	• Implementation of BCBS principles for effective risk data aggregation and risk reporting	• 2019
	IAIS	• Report on Assessment of G-SII Policy Measures and Supervisory Colleges	• 2019
		• Thematic self-assessment and peer review on Insurance Core Principle 12 (winding up and exit from the market)	• 2018H2
Enhancing resilience of non-bank financial intermediation	FSB	• Global Monitoring Report on Non-Bank Financial Intermediation	• End-2018
	IOSCO	• Level 2 peer review report on money market funds	• 2020H1
Making derivatives markets safer	FSB	• Fourteenth progress report on OTC derivatives market reforms	• 2019H1
	CPMI-IOSCO	• Implementation monitoring of the Principles for Financial Market Infrastructures (PFMI) – level 1 – update through on-line tracker	• Ongoing
		• PFMI – level 2 assessment reports (Switzerland, Brazil, US, Turkey, EU)	• 2018-2019
		• PFMI – level 3 assessment reports (topic and FMIs to be assessed)	• Ongoing
Other reform areas	FSB	• **Evaluation of the effects of reforms on SME financing**	• **2019H2**
		• Thematic peer review on LEI implementation	• 2019Q2
		• Country peer reviews of Mexico and South Africa	• 2019H2
		• Country peer reviews of Germany, Indonesia and the UK	• 2020
		• Implementation Monitoring Network survey on progress in other reform areas	• 2019Q2
		• Progress report on implementation of the recommendations in the second phase of the Data Gaps Initiative (by the staff of the IMF and FSB Secretariat)	• 2019H2
	IOSCO	• Implementation Report: G20/FSB Recommendations related to Securities Markets	• 2018H2
		• Implementation of IOSCO secondary markets principles	• 2018H2
		• Thematic review on suitability requirements for complex financial products	• 2018H2
		• Thematic review on business continuity plans	• 2020H1
	IAIS	• Thematic self-assessment and peer review on Insurance Core Principles 1 and 2	• 2019
		• Thematic self-assessment and peer review on Insurance Core Principles 4, 5, 7, 8	• 2019Q4

Note: Some monitoring activities are ongoing and will be completed in 2018-19. Evaluation activities are shown in bold.

Annex 2: Sources of information

Basel III

- Report to G20 Leaders on implementation of Basel standards, November 2018 (BCBS)
- Fifteenth progress report on adoption of the Basel regulatory framework, October 2018 (BCBS)
- Basel III Monitoring Report, October 2018 (BCBS)
- Basel III: Finalising post-crisis reforms, December 2017 (BCBS)
- RCAP jurisdiction-level assessments of final Basel III regulations (BCBS)
- RCAP assessments of the consistency of regulatory outcomes (BCBS)

Compensation practices

- Recommendations for consistent national reporting of data on the use of compensation tools to address misconduct risk, November 2018 (FSB)
- Supplementary Guidance to the FSB Principles and Standards on Sound Compensation Practices, March 2018 (FSB)

TBTF

- Seventh Report on the implementation of resolution reforms, November 2018 (FSB)
- Progress in adopting the Principles for effective risk data aggregation and risk reporting, June 2018 (BCBS)
- Progress report on the implementation of principles for effective supervisory colleges, December 2017 (BCBS)

Non-bank financial intermediation

- Global Shadow Banking Monitoring Report 2017, March 2018 (FSB)
- Assessment of shadow banking activities, risks and the adequacy of post-crisis policy tools to address financial stability concerns, July 2017 (FSB)

OTC derivatives

- OTC Derivatives Markets Reforms: Thirteenth Progress Report on Implementation, November 2018 (FSB)
- Trade reporting legal barriers: Follow-up of 2015 peer review recommendations, November 2018 (FSB)
- Review of OTC derivatives markets reforms: Effectiveness and broader effects of reforms, June 2017 (FSB)
- Implementation monitoring of the Principles for Financial Market Infrastructures (CPMI-IOSCO)

Other reform areas

- Implementation Report: G20/FSB Recommendations related to Securities Markets, forthcoming (IOSCO)
- Reforming major interest rate benchmarks: Progress report, November 2018 (FSB)

- Third Progress Report on the Second Phase of the G20 Data Gaps Initiative, September 2018 (FSB, IMF)
- Interest rate benchmark reform: overnight risk-free rates and term rates, July 2018 (FSB)
- FSB action plan to assess and address the decline in correspondent banking: Progress report to G20 Finance Ministers and Central Bank Governors, March 2018 (FSB)
- Country peer reviews (FSB)
- FSB jurisdictions' responses to the Implementation Monitoring Network survey (FSB)

Adherence to international financial standards

- Information on FSB members' commitments to lead by example (FSB)
- Initiative on international cooperation and information exchange (FSB)
- Multilateral Memorandum of Understanding Concerning Consultation and Cooperation and the Exchange of Information (IOSCO)
- Multilateral Memorandum of Understanding (IAIS)

Evaluation reports

- Evaluation of the effects of financial regulatory reforms on infrastructure finance, November 2018 (FSB)
- Incentives to centrally clear over-the-counter (OTC) derivatives: A post-implementation evaluation of the effects of the G20 financial regulatory reforms – final report, November 2018 (FSB, BCBS, CPMI, IOSCO)

Abbreviations

AEs	Advanced economies
AI	Artificial intelligence
AP	Asia Pacific
AUM	Assets under management
BCBS	Basel Committee on Banking Supervision
BIS	Bank for International Settlements
CCPs	Central counterparties
CDS	Credit default swap
CET1	Common Equity Tier 1 Capital
CMG	Crisis management group
CGFS	Committee on the Global Financial System
CoAgs	Cross-border cooperation agreements
CPMI	Committee on Payments and Market Infrastructures
CRAs	Credit rating agencies
DAR	Detailed assessment of observance of relevant financial sector standards and codes
DGI	Data Gaps Initiative
D-SIBs	Domestic systemically important banks
EMDEs	Emerging Market and Developing Economies
EU	European Union
EURIBOR	Euro Interbank Offered Rate
FSAP	Financial Sector Assessment Program
FSB	Financial Stability Board
FSSA	Financial Sector Stability Assessment
FMI	Financial market infrastructures
GDP	Gross domestic product
G-SIBs	Global systemically important banks
G-SIIs	Global systemically important insurers
G-SIFIs	Global systemically important financial institutions
G-SIIs	Global systemically important insurers
HQLA	High Quality Liquid Assets (Basel III)
IAIS	International Association of Insurance Supervisors
IASB	International Accounting Standards Board
IBOR	Interbank Offered Rate
ICPs	Insurance Core Principles (IAIS)
ICS	International Capital Standard (IAIS)
IF	Infrastructure finance
IFIAR	International Forum of Independent Audit Regulators
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
LCR	Liquidity Coverage Ratio (Basel III)
LEI	Legal Entity Identifier
LIBOR	London Interbank Offered Rate
MMFs	Money market funds
NAV	Net asset value
NBFI	Non-bank financial intermediation

NBNI	Non-bank non-insurer (G-SIFI)
NCCD	Non-centrally cleared derivatives
NSFR	Net Stable Funding Ratio (Basel III)
OFIs	Other financial intermediaries
OTC	Over-the-counter (derivatives)
PFMI	Principles for Financial Market Infrastructures (CPMI-IOSCO)
RAP	Resolvability assessment process
RCAP	Regulatory Consistency Assessment Programme (BCBS)
RoW	Rest of the world
RWAs	Risk-weighted assets
SFTs	Securities financing transactions
SSBs	Standard-setting bodies
SIFIs	Systemically important financial institutions
SMEs	Small and medium-sized enterprises
TBTF	Too-big-to-fail
TIBOR	Tokyo Interbank Offered Rate
TLAC	Total Loss-Absorbing Capacity (FSB)
TOR	Terms of reference
TRs	Trade repositories